CFS-77

US Model
Canadian Model

FM/AM STEREO CASSETTE-CORDER

SPECIFICATIONS

Radio section

Frequency range	FM 87.5–108 MHz AM 530–1,605 kHz (566–187 m)
Antennas	FM: Telescopic antenna AM: Built-in ferrite bar antenna

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

MICROFILM

Tape recorder section and general

Recording system	4-track 2-channel stereo
Fast winding time	Approx. 1 min. 30 sec. with Sony Cassette C-60
Frequency response	40–10,000 Hz (with standard cassette, with the TAPE SELECT switch set to TYPE I (NORMAL))
	40–12,000 Hz (with chromium dioxide cassette, with the TAPE SELECT switch set to TYPE II (CrO_2))
	40–13,000 Hz (with Sony metal cassette, with the TAPE SELECT switch set to TYPE IV (METAL))
S/N	37 dB
Total harmonic distortion	5%
Speakers	Two-way: Approx. 20 cm (8 inches) dia. woofers Approx. 5 cm (2 inches) dia. tweeters
Power output	USA model: 1 W × 2 (at 10% harmonic distortion) Canadian model: 3.5 W × 2 (at 10% harmonic distortion) at dc operation

— Continued on page 2 —

Tape Transport Mechanism Type	MDS–19S2

SONY®

SERVICE MANUAL

CFS-77

Inputs	Two external microphone input jacks (minijack) sensitivity 0.39 mV (–66 dB) for low impedance microphone One mixing microphone input jack (minijack) for low impedance microphone sensitivity 0.78 mV (–60 dB) Two line input jacks (phono jack) sensitivity 0.25 V (–10 dB) input impedance 47 kilohms
Outputs	Two line output jacks (phono jack) load impedance 10 kilohms or higher rated output 0.44 V (–5 dB) at load impedance 47 kilohms Two external speaker jacks (minijack) for 4-ohm to 8-ohm impedance speaker Headphone jack (stereo binaural jack) for 8-ohm impedance headphones
Power requirements	120 V ac, 60 Hz 12 V dc, eight batteries size D (IEC designation R20) 12 V car battery with optional Sony DCC-120 Car Battery Cord
Power consumption	15 W ac
Battery life	Approx. 10 hours of continuous recording with the built-in microphones using Eveready No. 1250 Heavy Duty Batteries
Dimensions	Approx. 575 × 286 × 145 mm (w/h/d) ($22^3/_4 \times 11^3/_8 \times 5^3/_4$ inches) incl. projecting parts and controls not incl. handle
Weight	Approx. 7.5 kg (16 lb 9 oz) incl. batteries

Handling Precautions for MOS ICs (TC4081BP)

Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

(Particular care should be taken under conditions of low humidity.)

Precautions in Replacing MOS ICs

1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential.
   (The ICs should be stored in that manner until mounted on the circuit board.)

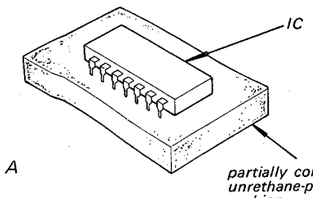


Fig. A

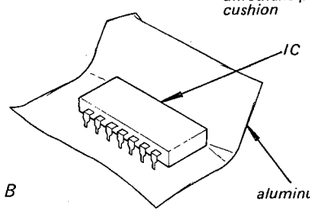


Fig. B

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.

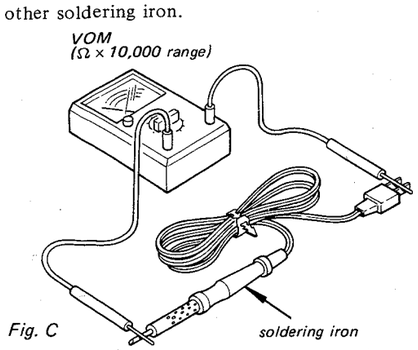


Fig. C

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.

4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
   - Use a paper clip modified by soldering in a wire braid insert.

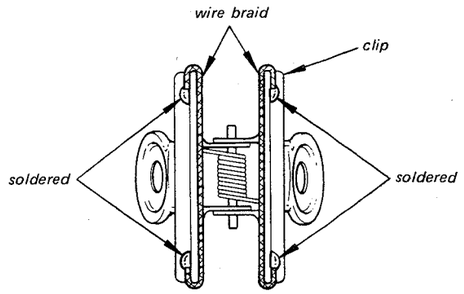


Fig. D Make sure that there is no solder on the inside.

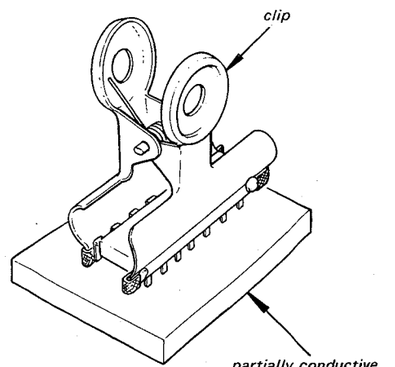


Fig. E

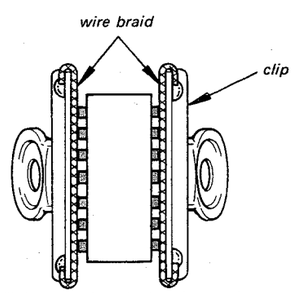


Fig. F Make sure that all the pins are in contact with the wire braid (all the pins will then be at the same potential.).

- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.

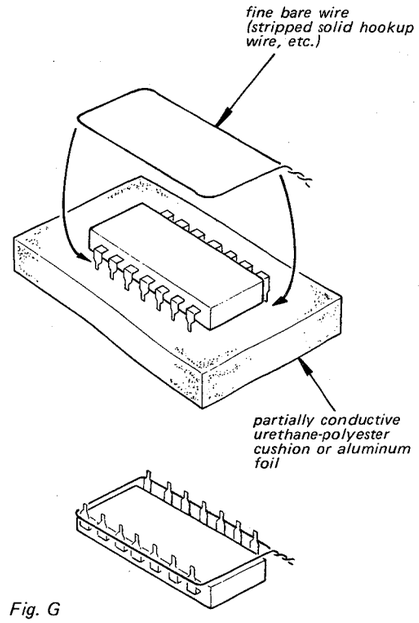


Fig. G

- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.

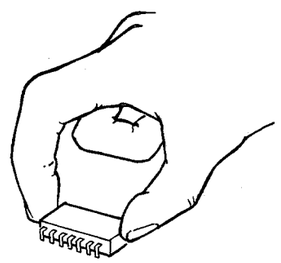


Fig. H

5. Method of Mounting
   Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.). Remove the clip or the bare shorting wire only after all the pins have been soldered.

Precaution while Checking C-MOS ICs

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B– voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

Example:

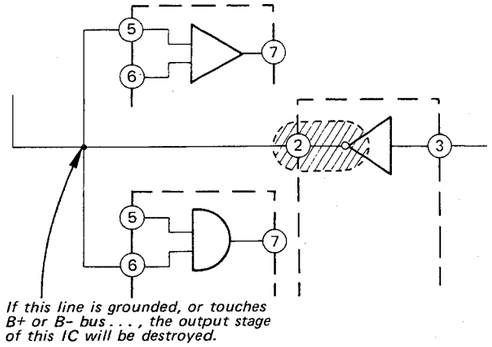
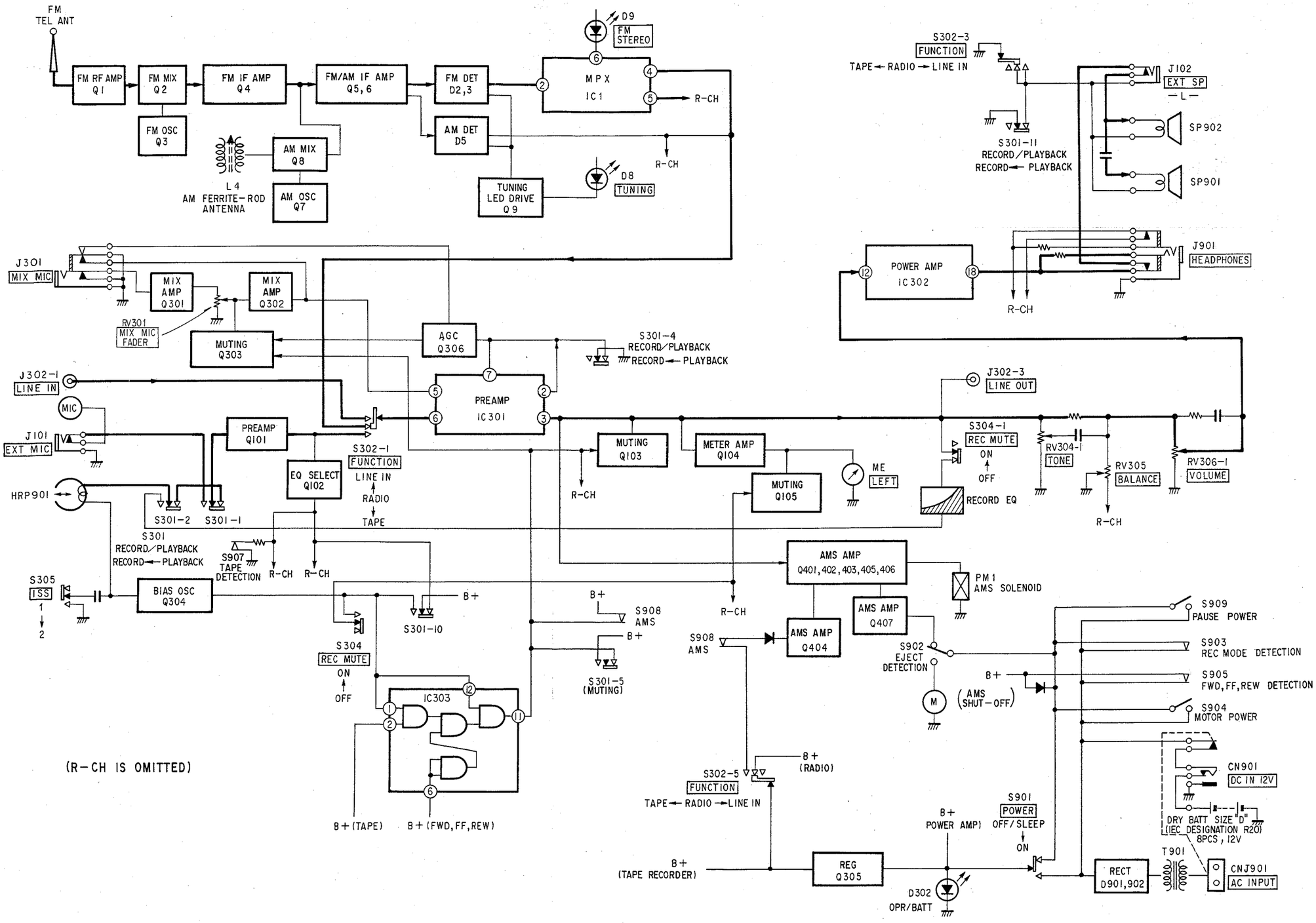


Fig. I

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM

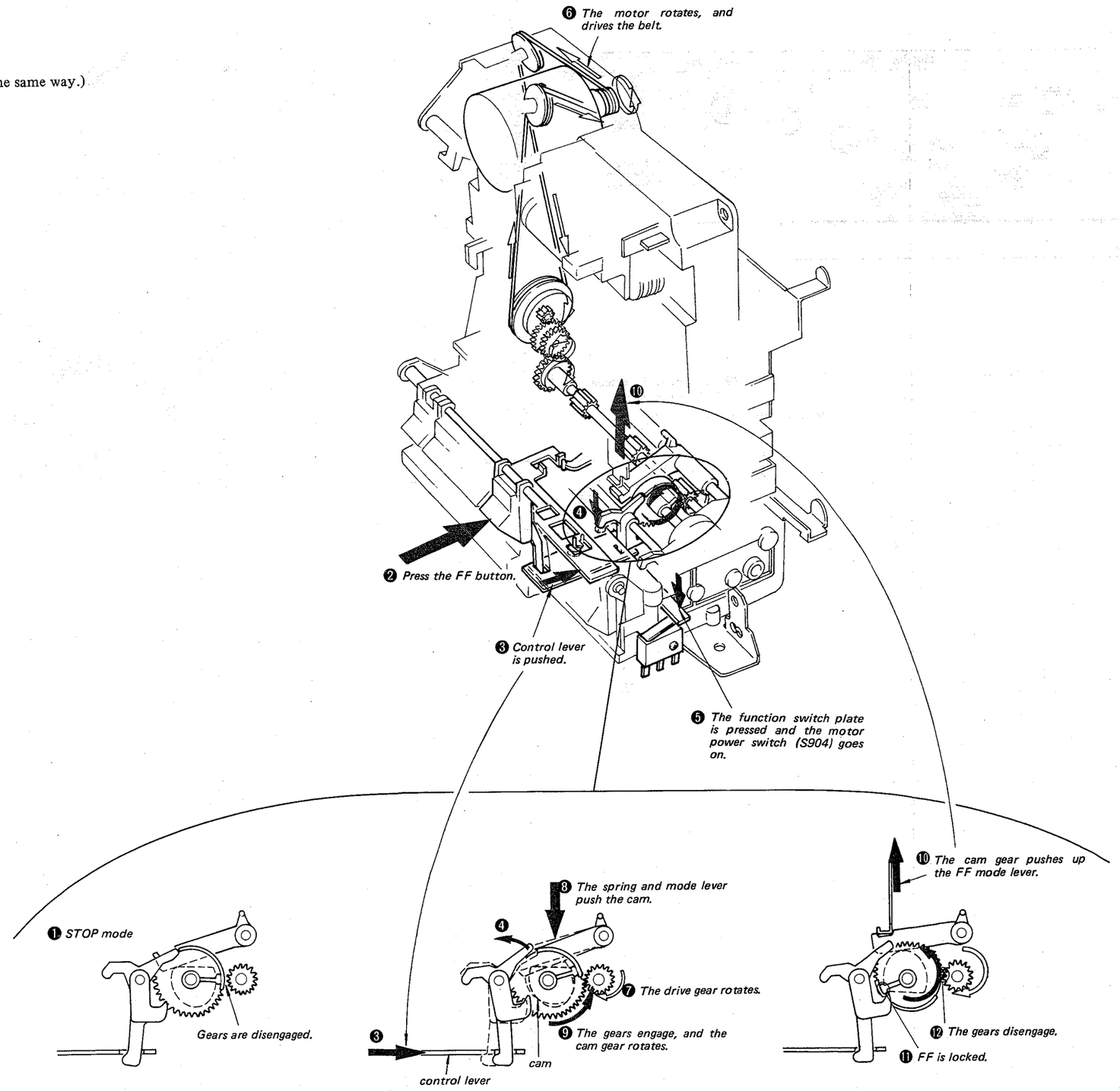


(R-CH IS OMITTED)

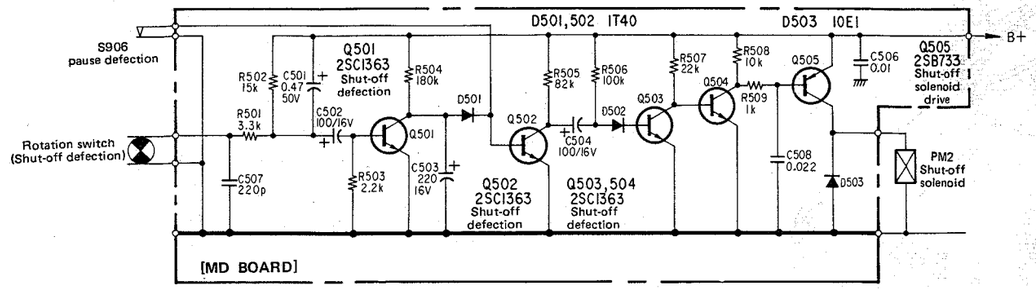
1-2. TECHNICAL DESCRIPTION

- **FF Mode**

(FWD, REW, REC and PAUSE ON operate in the same way.)


❻ The motor rotates, and drives the belt.
❿
❹
❷ Press the FF button.
❸ Control lever is pushed.
❺ The function switch plate is pressed and the motor power switch (S904) goes on.
❶ STOP mode
Gears are disengaged.
❸
control lever
❹
❽ The spring and mode lever push the cam.
❼ The drive gear rotates.
❾ The gears engage, and the cam gear rotates.
cam
❿ The cam gear pushes up the FF mode lever.
⓬ The gears disengage.
⓫ FF is locked.

- **Full Auto Shut-Off**

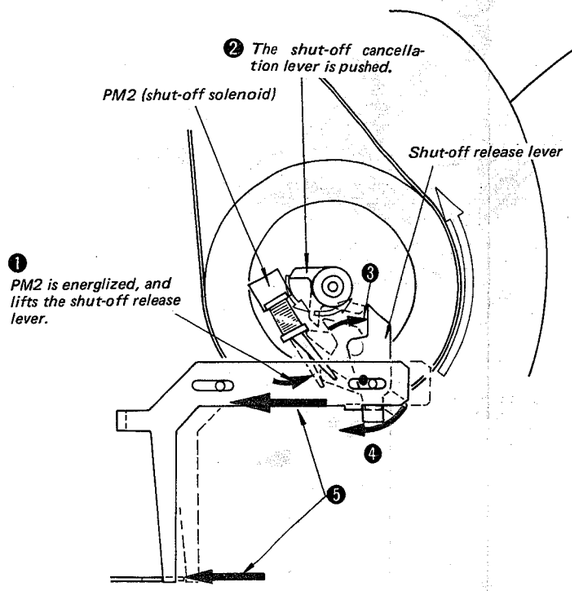


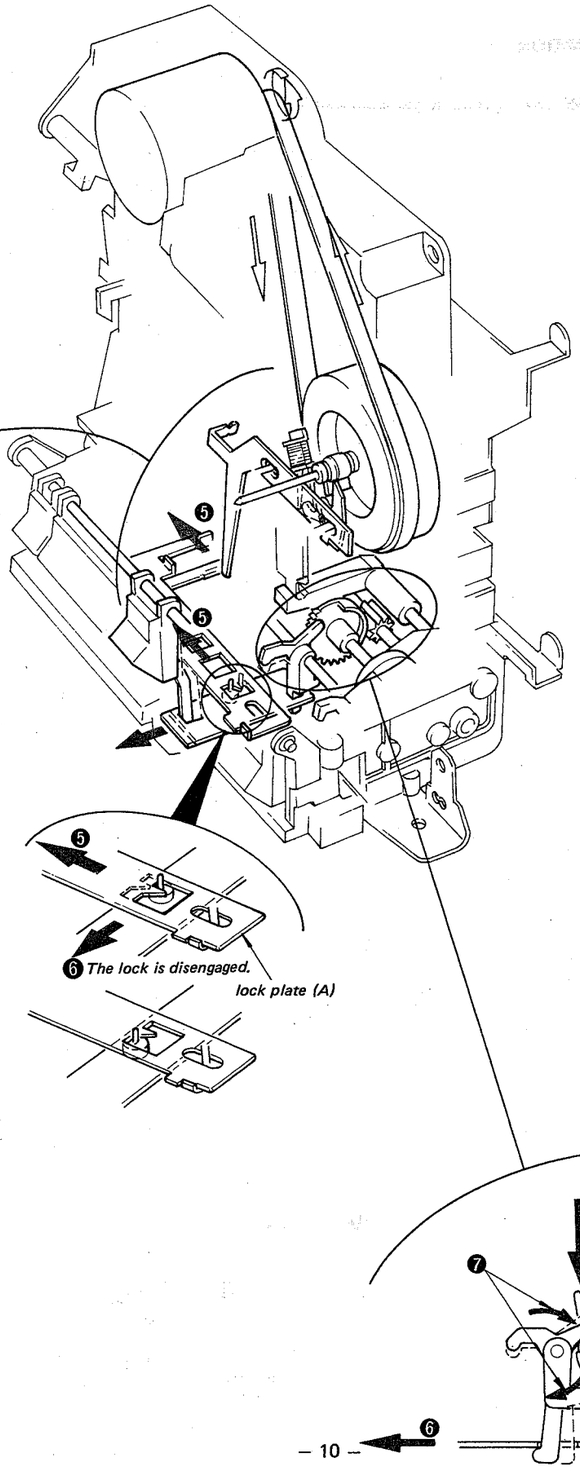
[FULL AUTO SHUT-OFF]

During FWD, REC, FF and REW, the tape counter pulley causes the rotation switch to turn on and off repeatedly, and because of this, Q501 turns on and off simultaneously. The result is Q502:OFF → Q503:ON → Q504:OFF → Q505:OFF, and PM2 is OFF. When the rotation of the reel base stops at tape end, the tape counter also stops, and the rotation switch remains either ON or OFF.

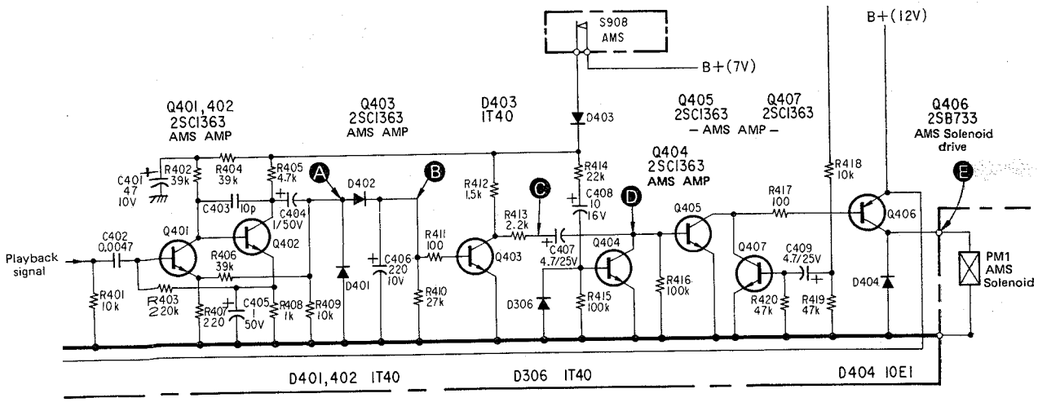
In either case, the potential at the base of Q501 drops and Q501 goes off. When C503 is charged, base current flows through D501 to Q502 and turns it on. Therefore, C504 begins to discharge, and during this interval only: Q503:OFF → Q504:ON → Q505:ON and PM2 is energized.

In order to prevent the mechanism from shutting off during PAUSE, Q502 is forced off by S906. After PM2 (shut-off solenoid) is energized, shut-off is completed as shown in the illustration.

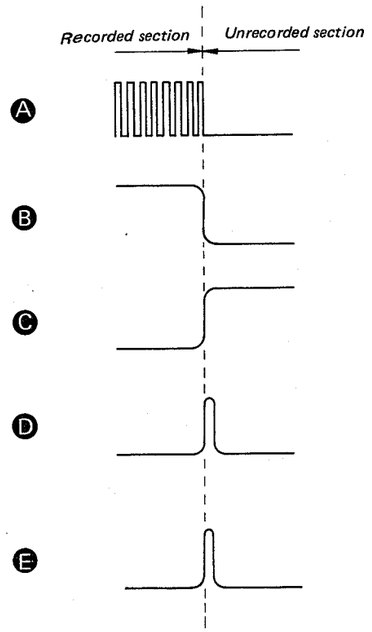




• AMS (Automatic Music Sensor)



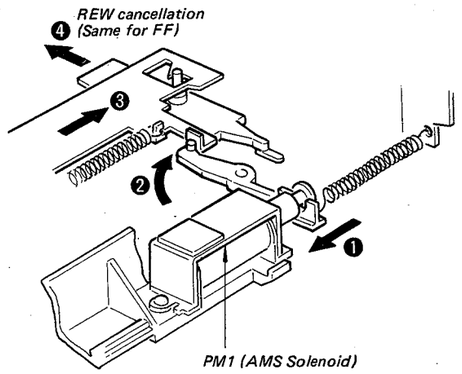
When the FWD and FF buttons or FWD and REW buttons are pushed together, S908 goes on and AMS state is achieved. When the tape goes from a recorded section to an unrecorded section the following waveforms Ⓐ – Ⓔ are generated and PM1 is energized.



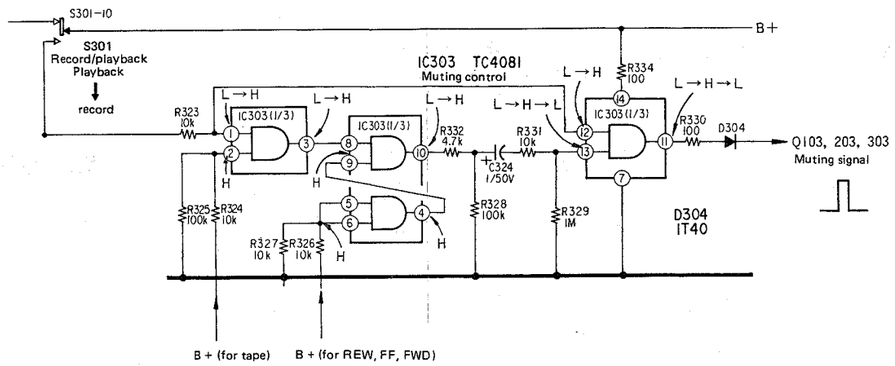
At this time, Q404 grounds the AMS signal so that PM1 is not energized at the moment S908 goes on.

Q407 goes on when the EJECT button is pressed, energizes PM1, and releases the FF or REW mode.

After PM1 (AMS solenoid) is energized, the operations illustrated below take place to return to the FWD mode.



• Record Muting



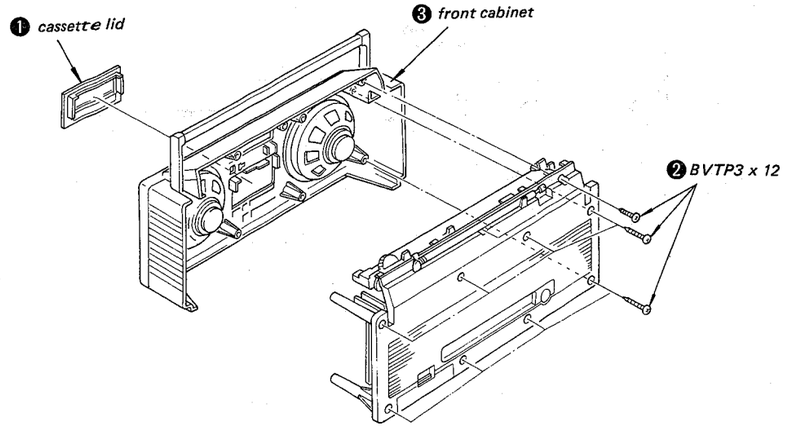
When S301 is switched to the record side, the voltages change because of S301-10. The terminal (11) of IC303 goes high momentarily, turning on Q103, 203, 303 for muting.

SECTION 2
DISASSEMBLY

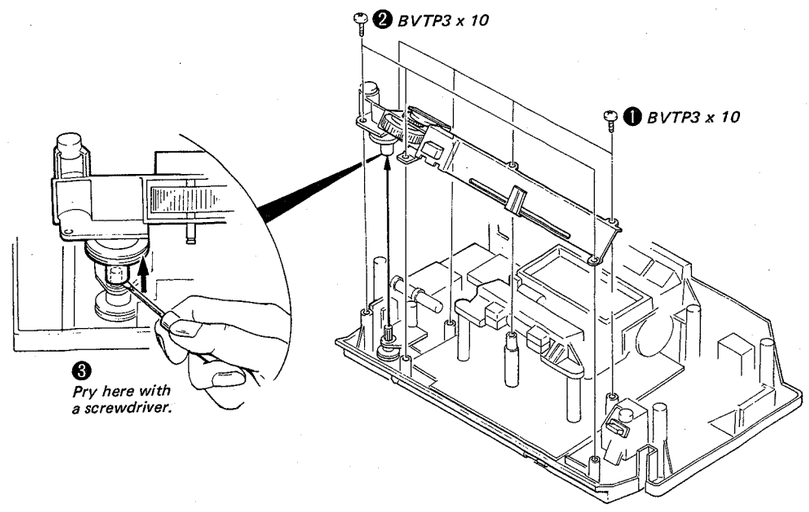
2-1. REMOVAL

Note: Follow the disassembly procedure in the numerical order given.

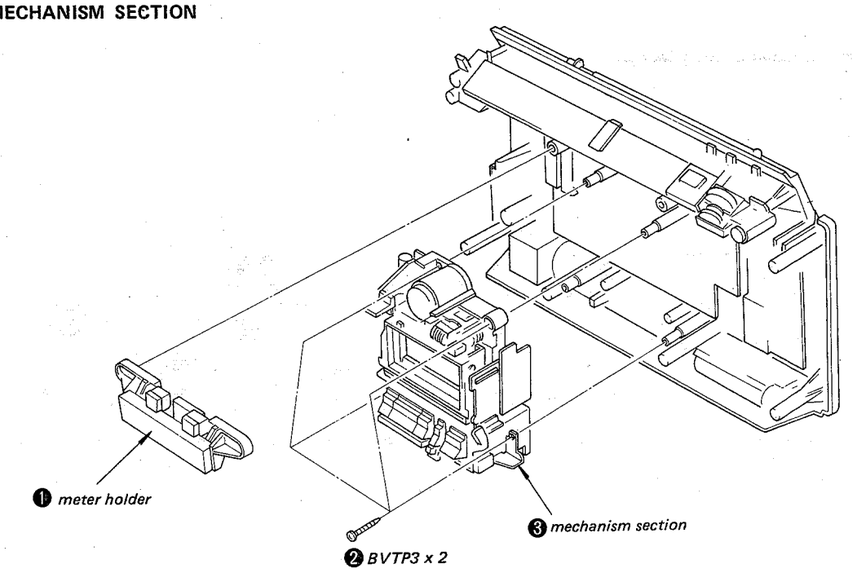
FRONT CABINET REMOVAL



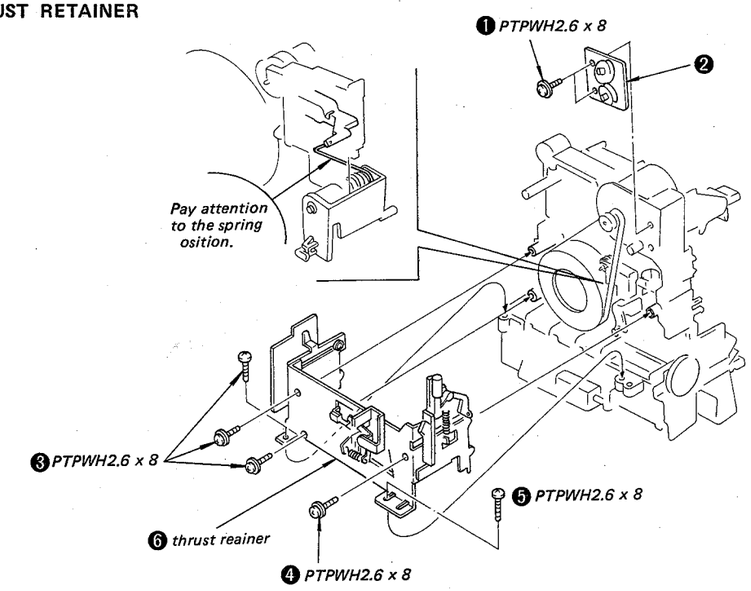
DIAL SECTION REMOVAL



MECHANISM SECTION

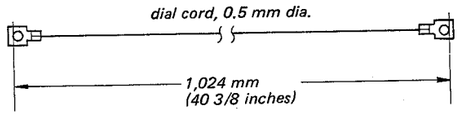


THRUST RETAINER



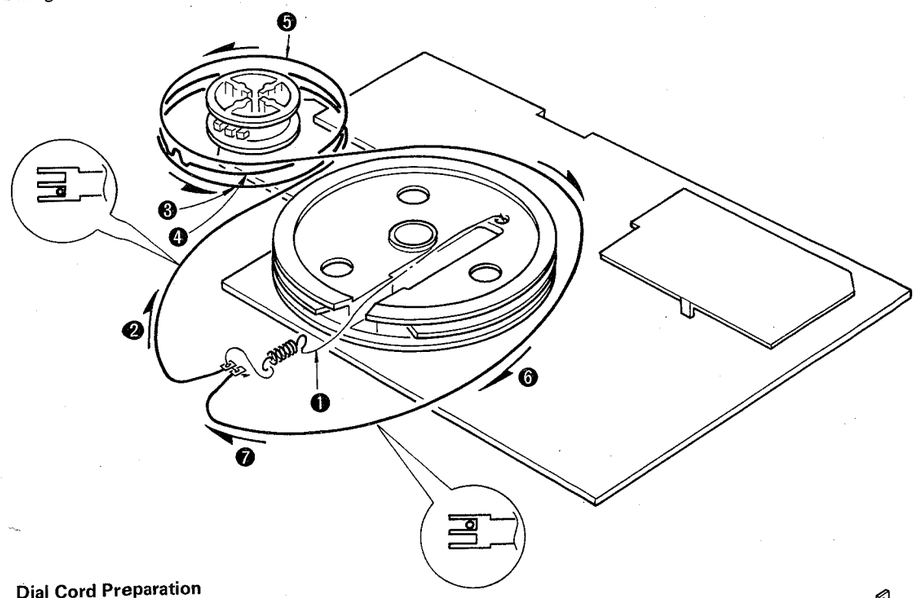
CAPSTAN BELT AND FR IDLER CAN BE REPLACED.

2-2. DIAL CORD STRINGING



2) Drum Cord Striging

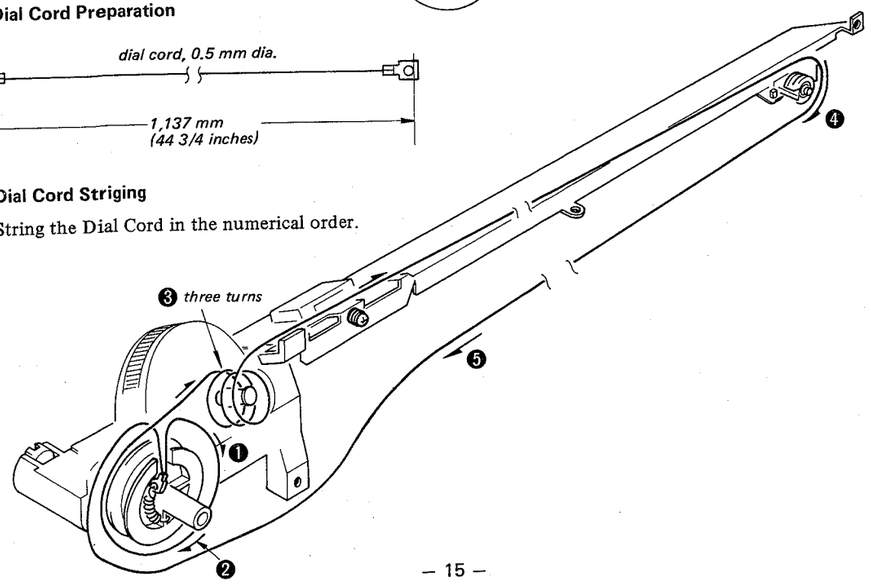
String the Drum Cord in the numerical order.

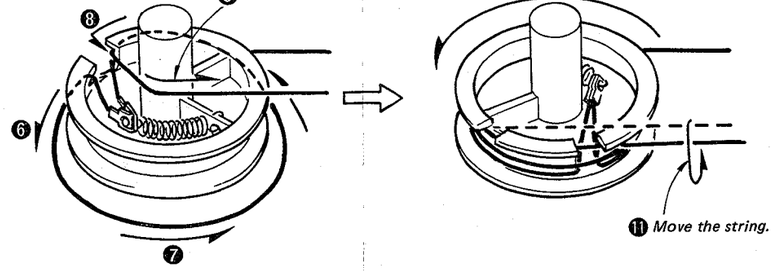


3) Dial Cord Preparation

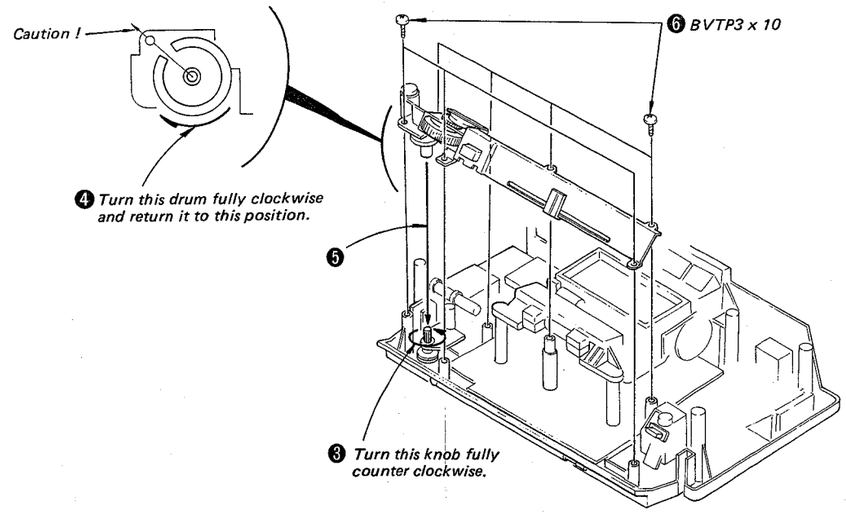
4) Dial Cord Striging

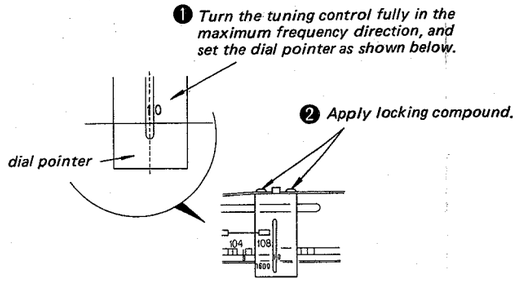
String the Dial Cord in the numerical order.





5) Dial Pointer Setting


Caution !
❻ BVTP3 x 10
❹ Turn this drum fully clockwise and return it to this position.
❺
❸ Turn this knob fully counter clockwise.


❶ Turn the tuning control fully in the maximum frequency direction, and set the dial pointer as shown below.
❷ Apply locking compound.
dial pointer
10
104
108
109

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

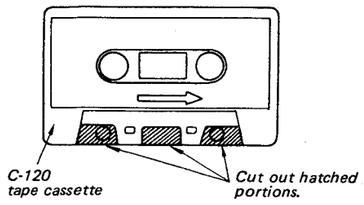
1. Clean the following parts with a denatured-alcohol-moistened swab:

   record/playback head — pinch roller
   erase head — rubber belts
   capstan — idlers

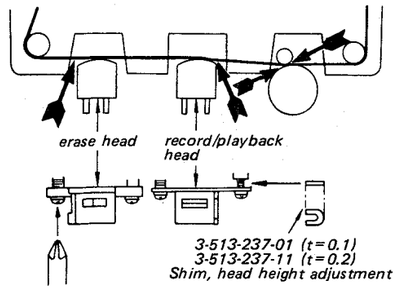
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Head Height Adjustment

1. Prepare an adjustment cassette as shown below.



2. In record mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.

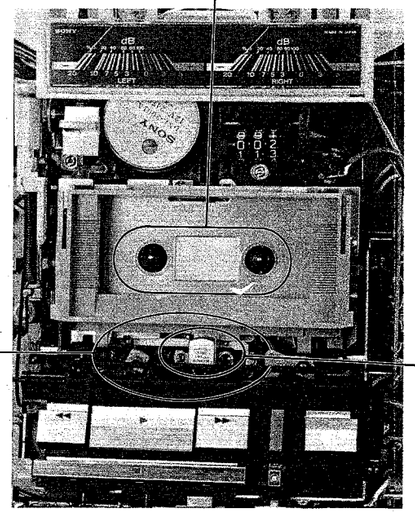


Torque Measurement

Torque	Torque meter	Meter reading
Forward	CQ-102C	22 – 55 g·cm (0.3 – 0.76 oz·inch)
Fast Forward and Rewind	CQ-201B	Less than 130 g·cm (less than 1.8 oz·inch)
back tension	CQ-102Q	2 – 5 g·cm (0.03 – 0.07 oz·inch)

Tape Pulling Strength Measurement

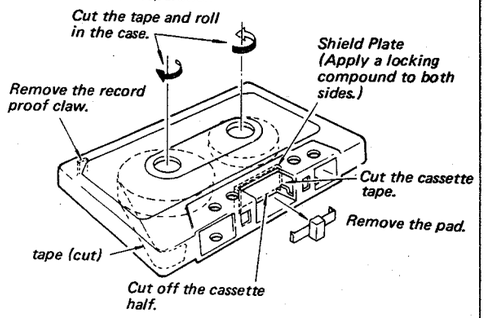
Meter	Meter reading
CQ-403	more than 160 g (more than 5.64 oz)

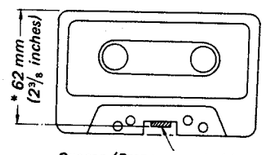


REC/PB Head Installation and Position Adjustment

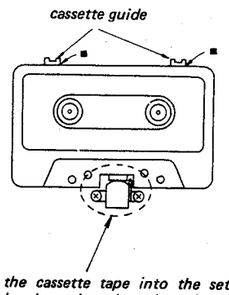
- This adjustment is necessary for the CUE detection of AMS.

1. Cassette Tape Preparation





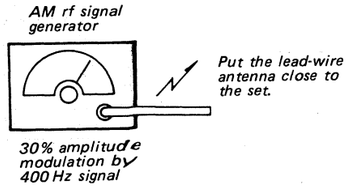
*Spacer (Prepare a suitable material and install it so that the distance marked by * is 62 mm (2 3/8 inches) and apply a locking compound.)*

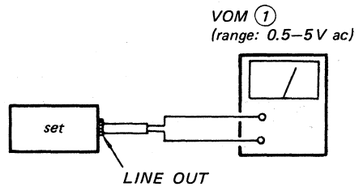


2. Set the cassette tape into the set and install the head so that the edge of the head is in contact with the spacer when pressing the FWD button and FF button or the FWD button and RWD button at the same time. (At this time, the portion marked by ■ is in contact with the cassette). Then, adjust the REC/PB Azimuth Adjustment and apply a locking compound to an installation screw.

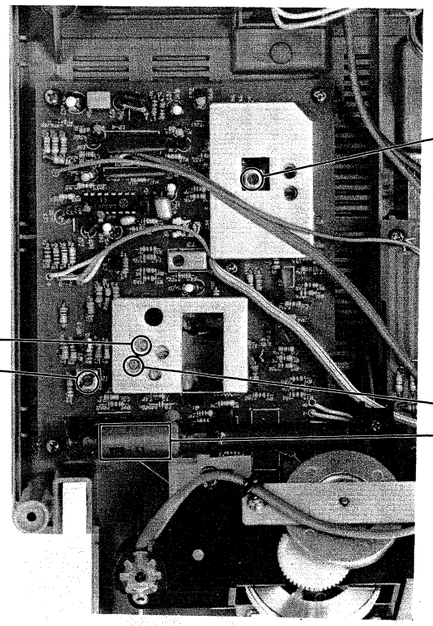
3-2. ELECTRICAL ADJUSTMENTS

MW SECTION





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

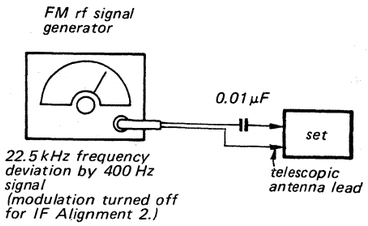


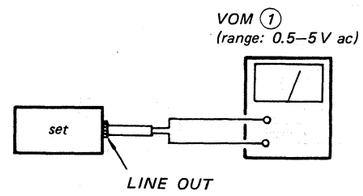
MW IF ALIGNMENT	
Adjust for a maximum reading on VOM ① .	
T6	455 kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM ① .	
1,680 kHz	CT4
520 kHz	T2

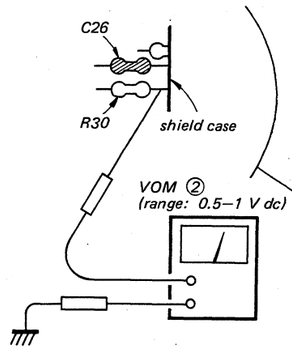
MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM ① .	
CT3	1,400 kHz
L4	620 kHz

FM SECTION

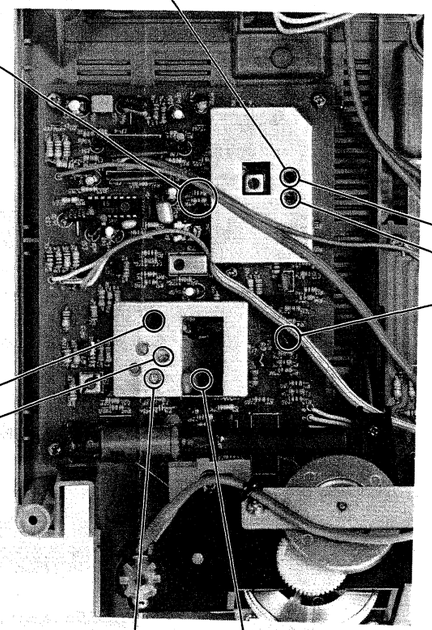

FM rf signal generator
0.01 μF
set
22.5 kHz frequency deviation by 400 Hz signal (modulation turned off for IF Alignment 2.)
telescopic antenna lead



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



FM IF ALIGNMENT 2 (10.7 MHz with no modulation)
Adjust for 0 V reading on VOM ② .
T5



FM IF ALIGNMENT 1 (10.7 MHz with modulation)
Adjust for a maximum reading on VOM ① .
T5
T4
T1

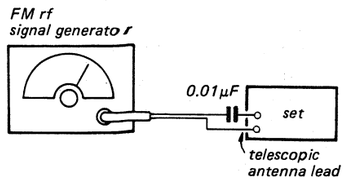
FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM ① .	
87.1 MHz	L3
108.5 MHz	CT2

CT1	L2
108.5 MHz	87.1 MHz
Adjust for a maximum reading on VOM ① .	
FM TRACKING ADJUSTMENT	

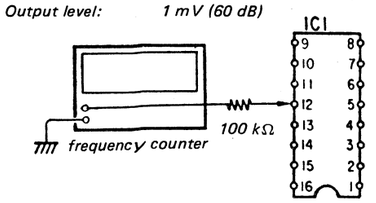
19 kHz Adjustment

A) Regular Method

Procedure:



Carrier frequency: 98 MHz
Modulation: 400 Hz, 75 kHz deviation (100 %)
Output level: 1 mV (60 dB)

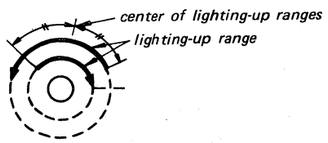


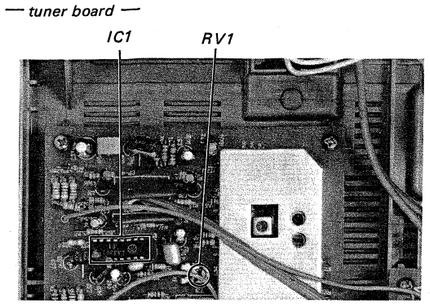
1. Tune the set to 98 MHz.
2. Adjust RV1 for 19 kHz ±30 Hz on the counter.

B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV1 clockwise or counterclockwise and memorize the lighting-up range of the stereo lamp.
3. Secure RV 1 at the center of the lighting-up range of both turns as shown below.





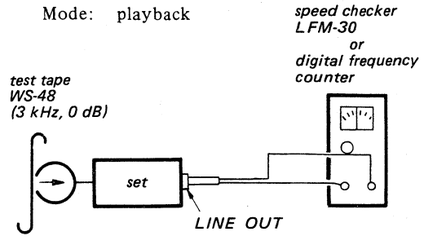
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

Mode: playback

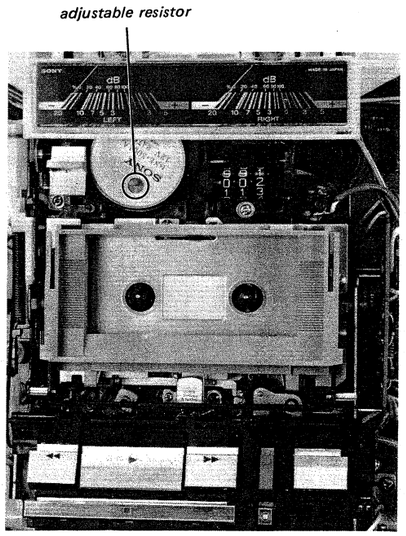


Specification:

Speed checker	Digital frequency counter
+3 / −2.5 %	2,925 – 3,090 Hz

Frequency difference between the beginning and the end of the tape should be within 1 % (30 Hz).

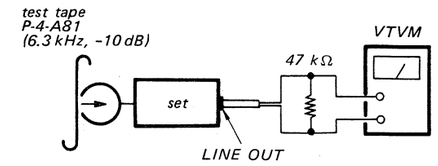
Adjustment Location:



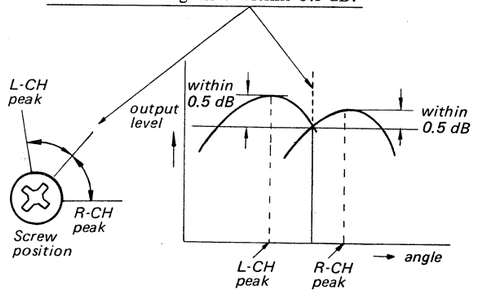
Record/playback Head Azimuth Adjustment

Procedure:

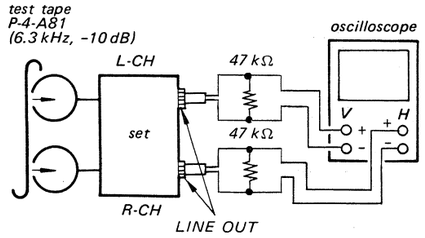
1. Mode: playback

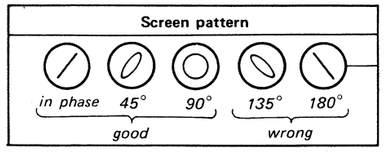


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw where both of output levels match together within 0.5 dB.

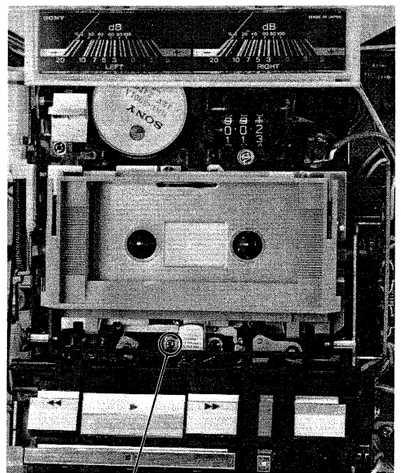


3. Phase Check
Mode: playback





Adjustment Location:



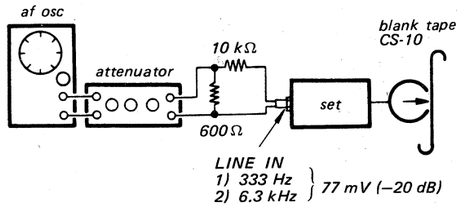
Record Bias Adjustment

Setting:

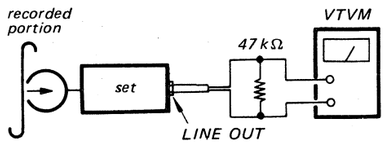
TONE control: HIGH
RADIO switch: OFF

Procedure:

1. Mode: record



2. Mode: playback

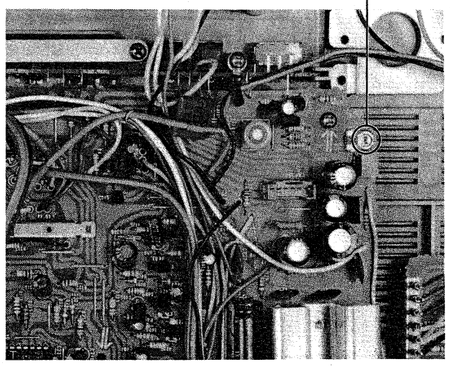


Confirm that the LINE OUT level of 6.3 kHz signal is 2 ±2 dB relative to that of 333 Hz. If necessary, adjust RV302 and repeat the step 1 given above.

Adjustment Location:

— audio board —

RV302



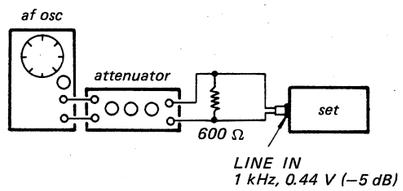
Level Meter Adjustment

Setting:

Power supply voltage: 12 V dc
TAPE switch : LINE IN

Procedure:

1. Mode: record

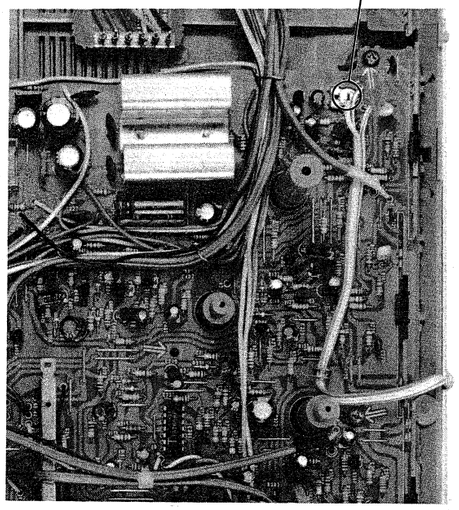


Adjust RV303 so that level meter indication of L-CH becomes the same as R-CH.

Adjustment Location:

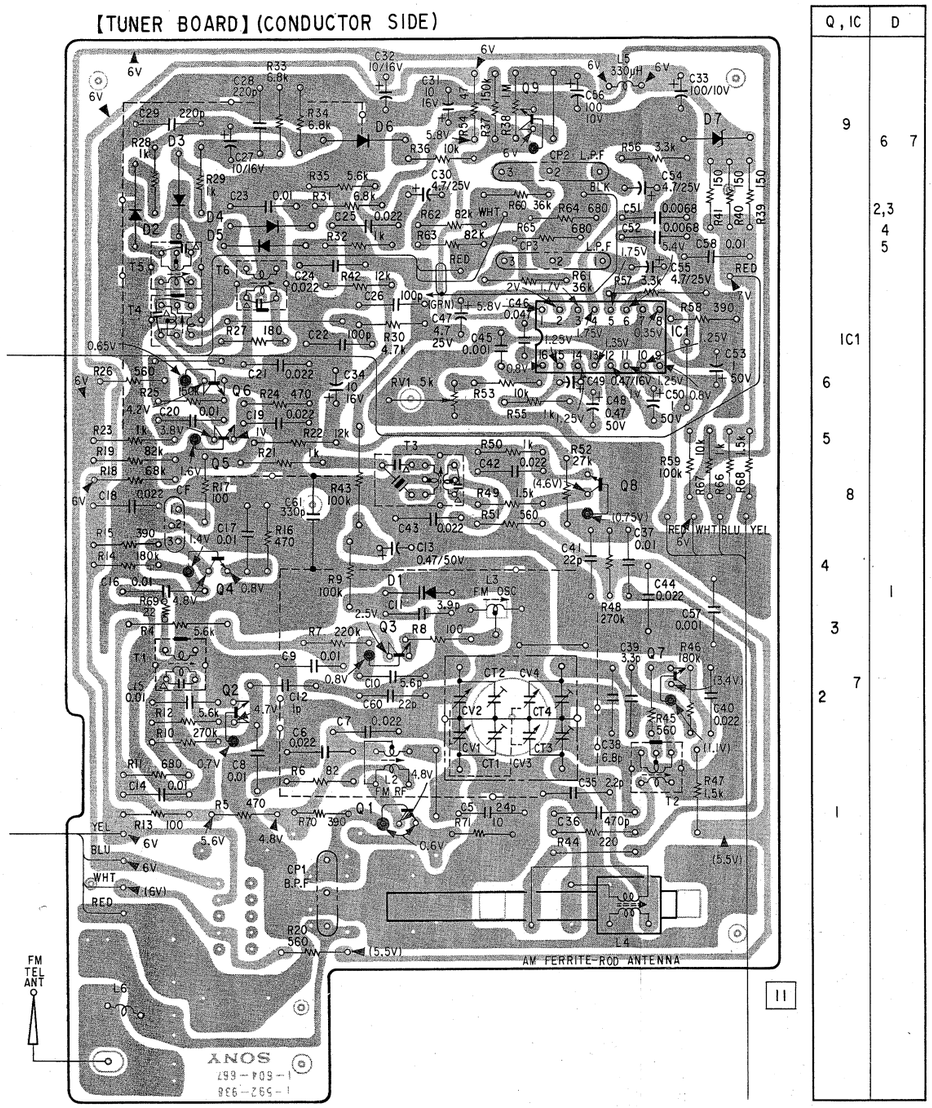
audio board

RV303



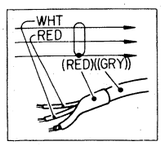
4-1. MOUNTING DIAGRAM – Tuner Board –

– Conductor Side –



Note:

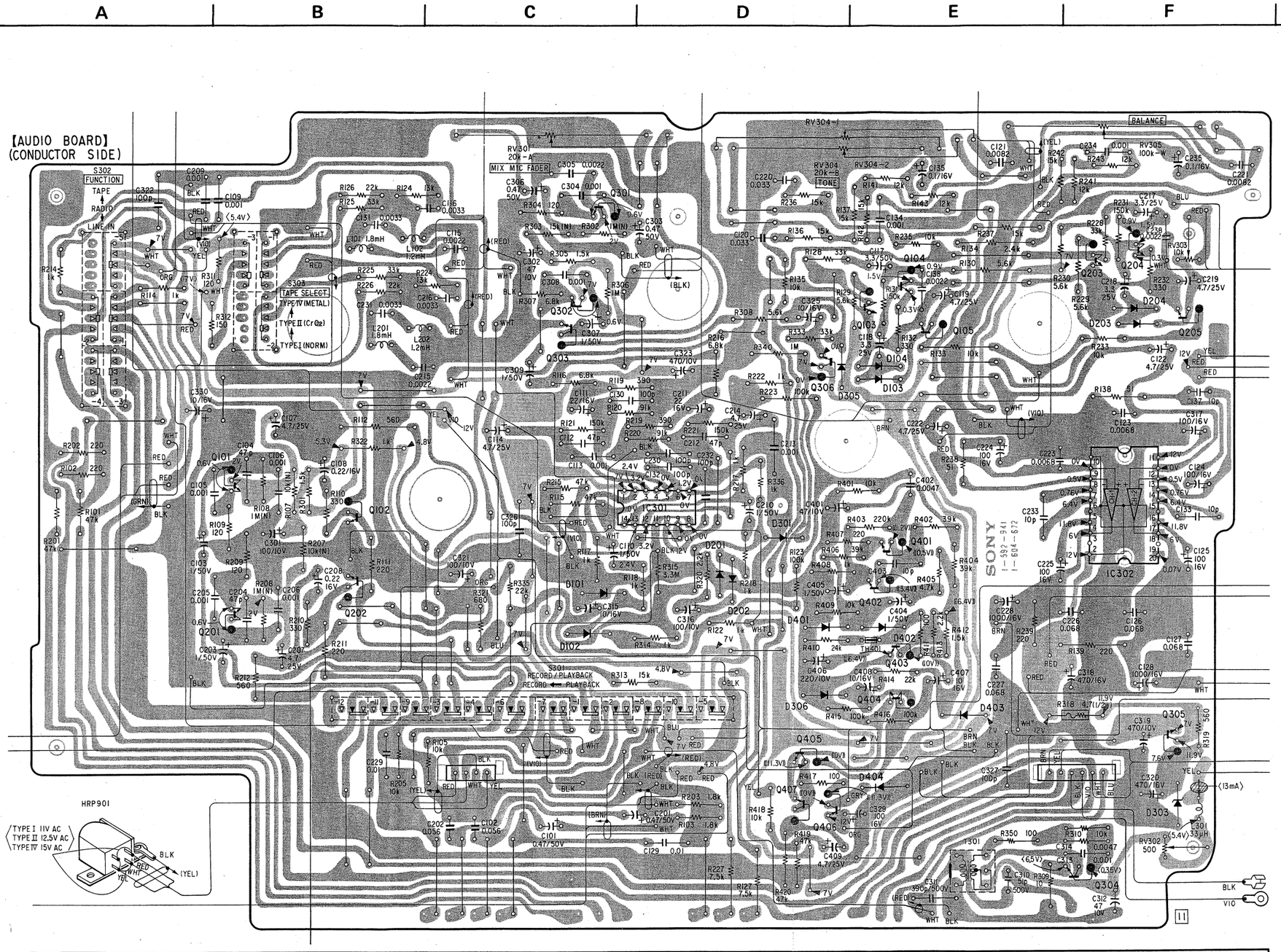
- Color code of sleeving over the end of the jacket.



- [⊣]: indicates side identified with part number.
- ▒▒: B+ pattern

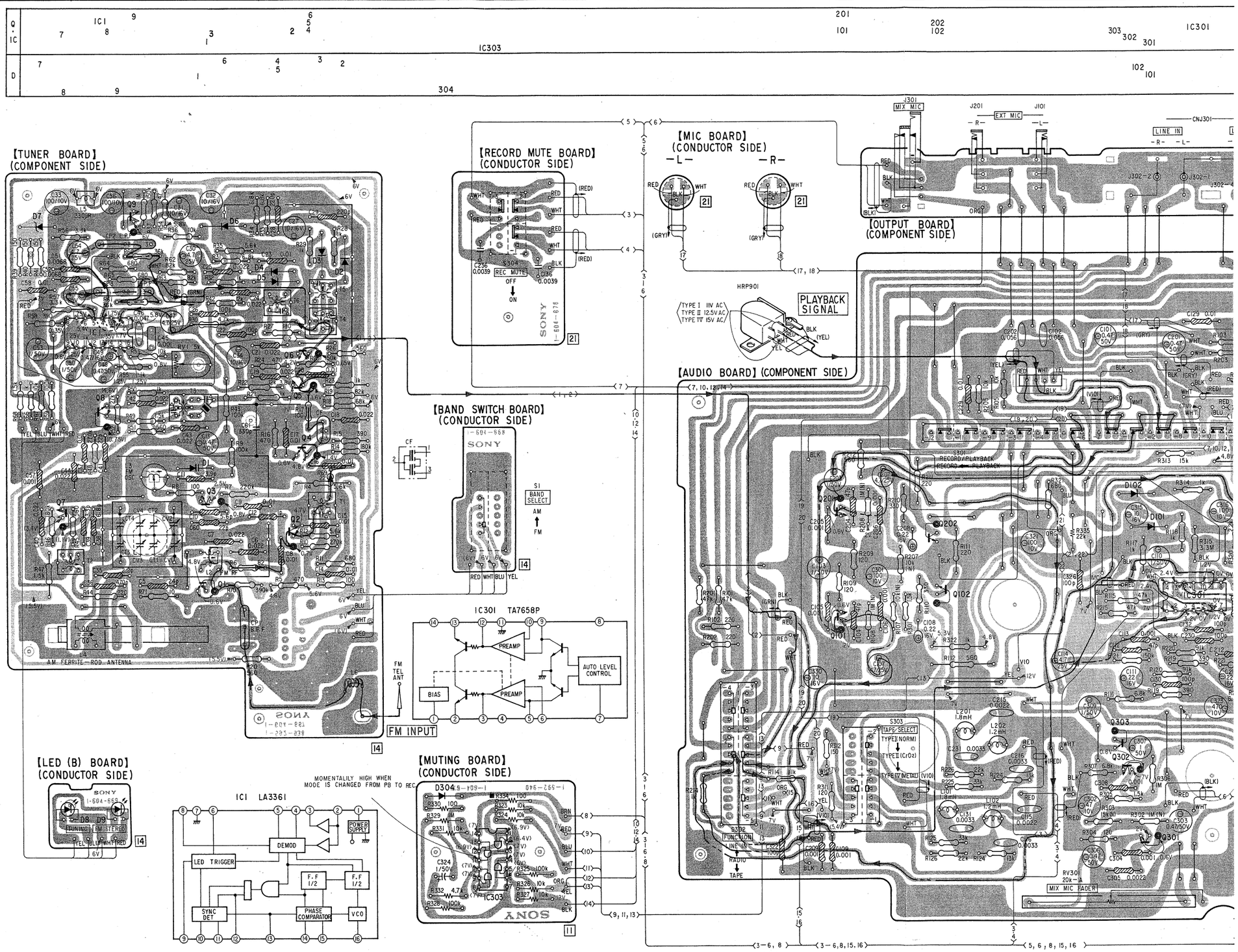
4-2. MOUNTING DIAGRAM — Audio Board —

— Conductor Side —



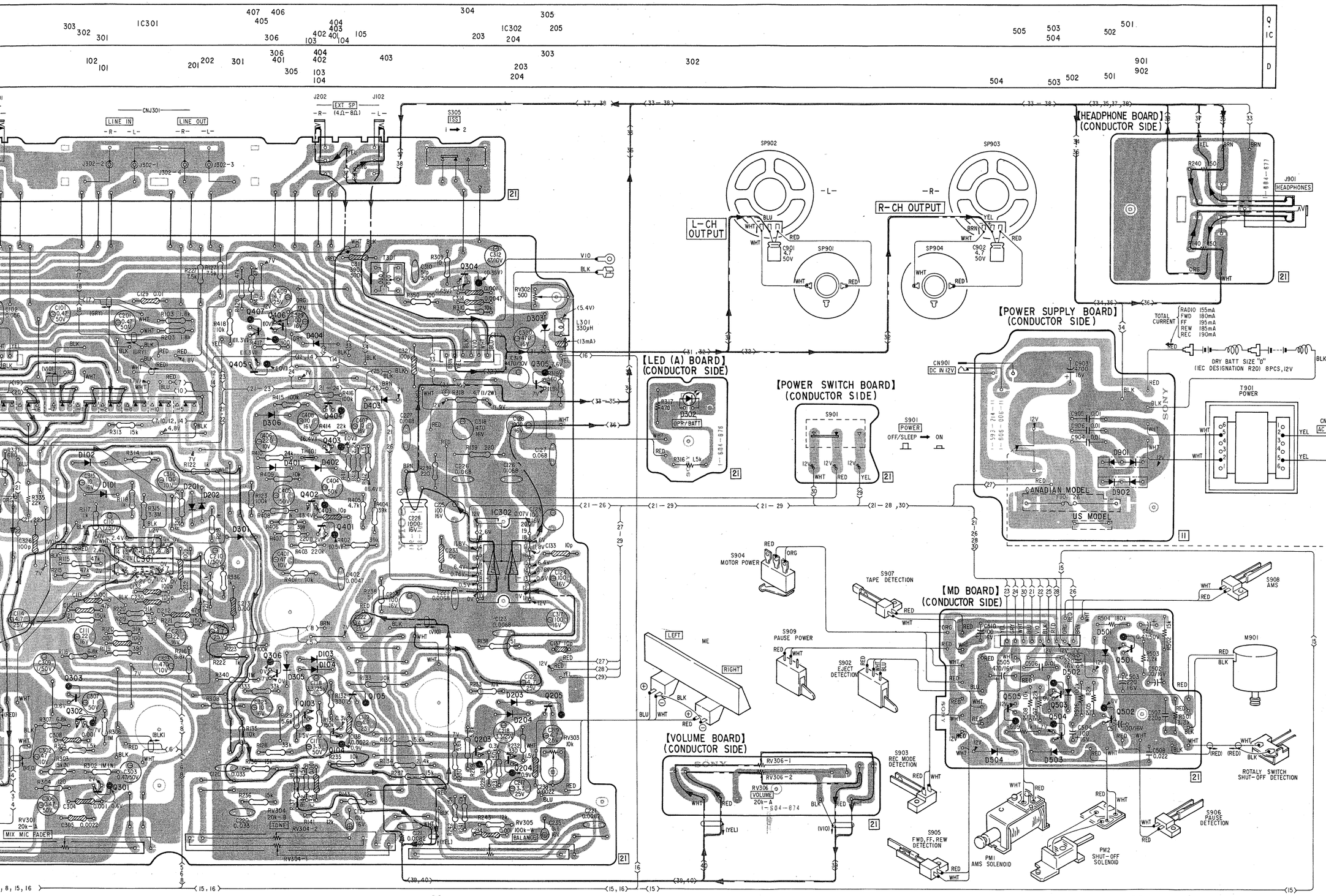
| | | |

4-3. MOUNTING DIAGRAM

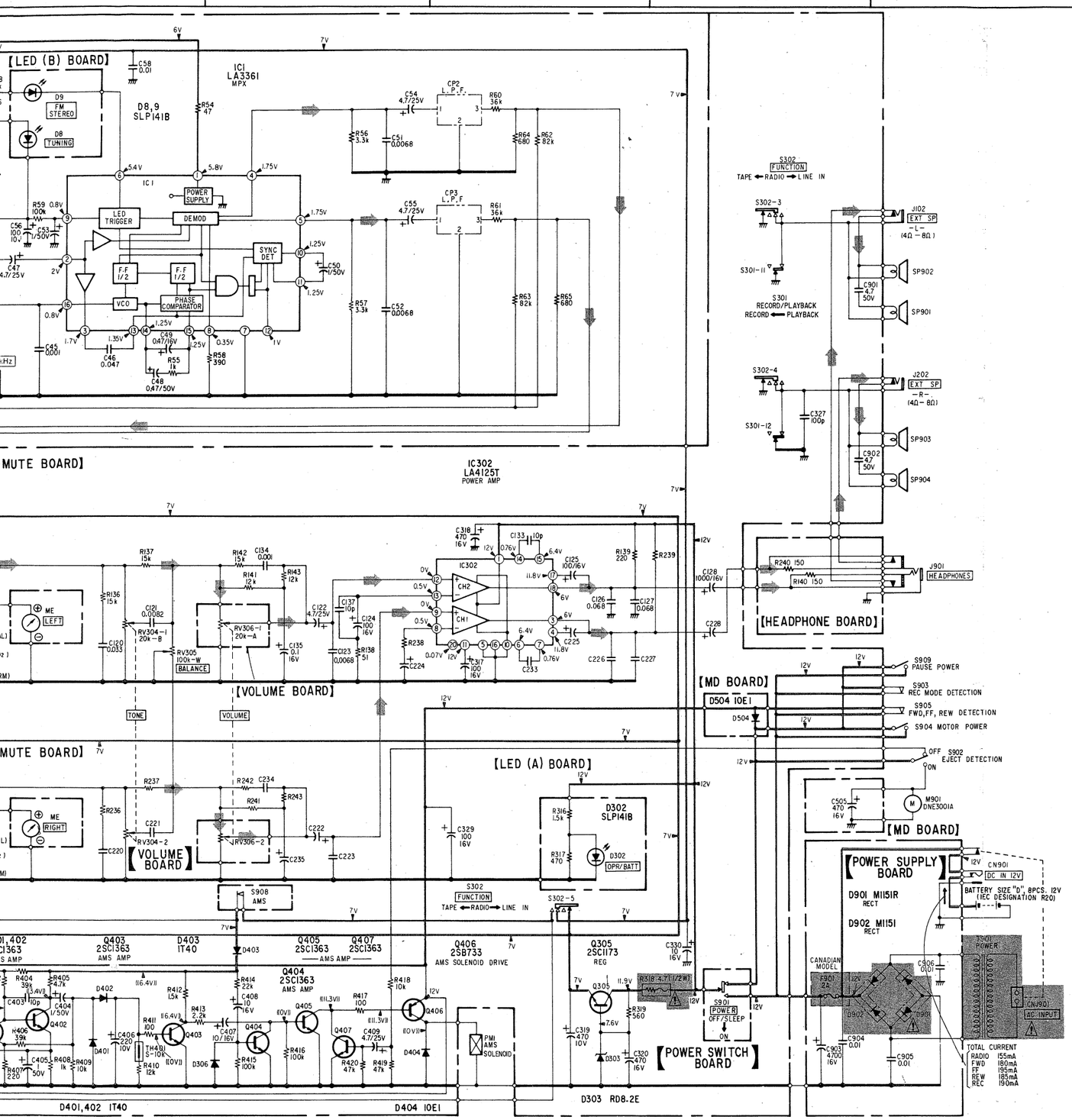


H I J K L M N O

1 2 3 4 5

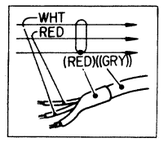


4-4. SCHEMATIC DIAGRAM



Note: for Mounting Diagram

- Color code of sleeving over the end of the jacket.



- ■ : part mounted on the conductor side.
- Ⓕ : fusible resistor.
- ▒ : B+ pattern
- ▬▶▬ : signal path
- ▬▶▬ : L-CH signal path
- ▬▶▬ : R-CH signal path

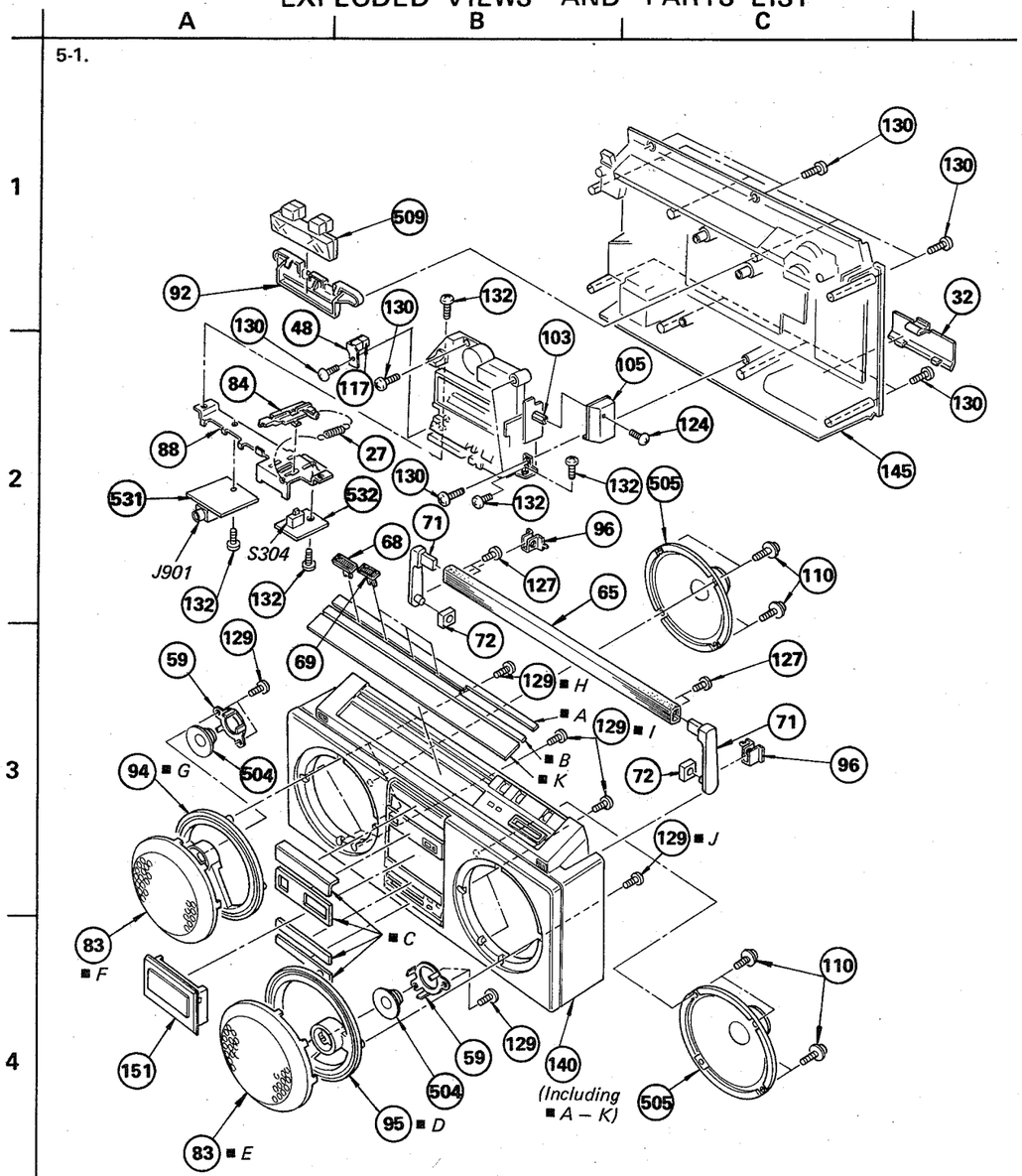
Note: for Schematic Diagram

- Components for right channel have same values as for left channel.
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- : nonflammable resistor.
- : fusible resistor.
- (N) : low-noise resistor.
- : panel designation.
- : adjustment for repair.
- : B+ bus.
- Readings are taken under no-signal (detuned) conditions with a VOM (20kΩ/V).
  ( ) : AM
  < > : RECORD
  (( )) : AMS
- AC voltage readings in the bias oscillator with a VTVM.
- Total current is measured with no cassette installed.
- ◀▒ : signal path

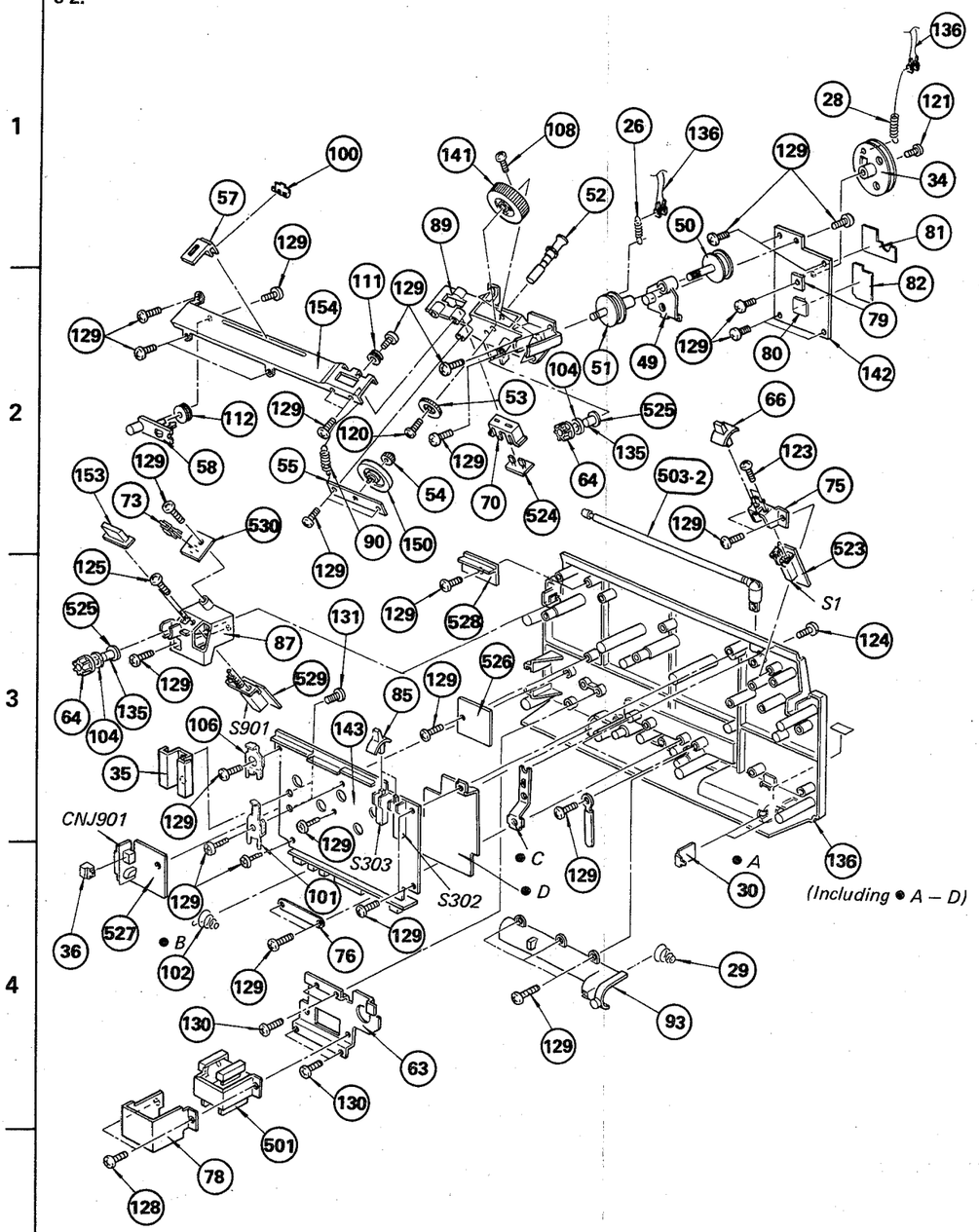
SECTION 5

EXPLODED VIEWS AND PARTS LIST

5-1.



5-2.



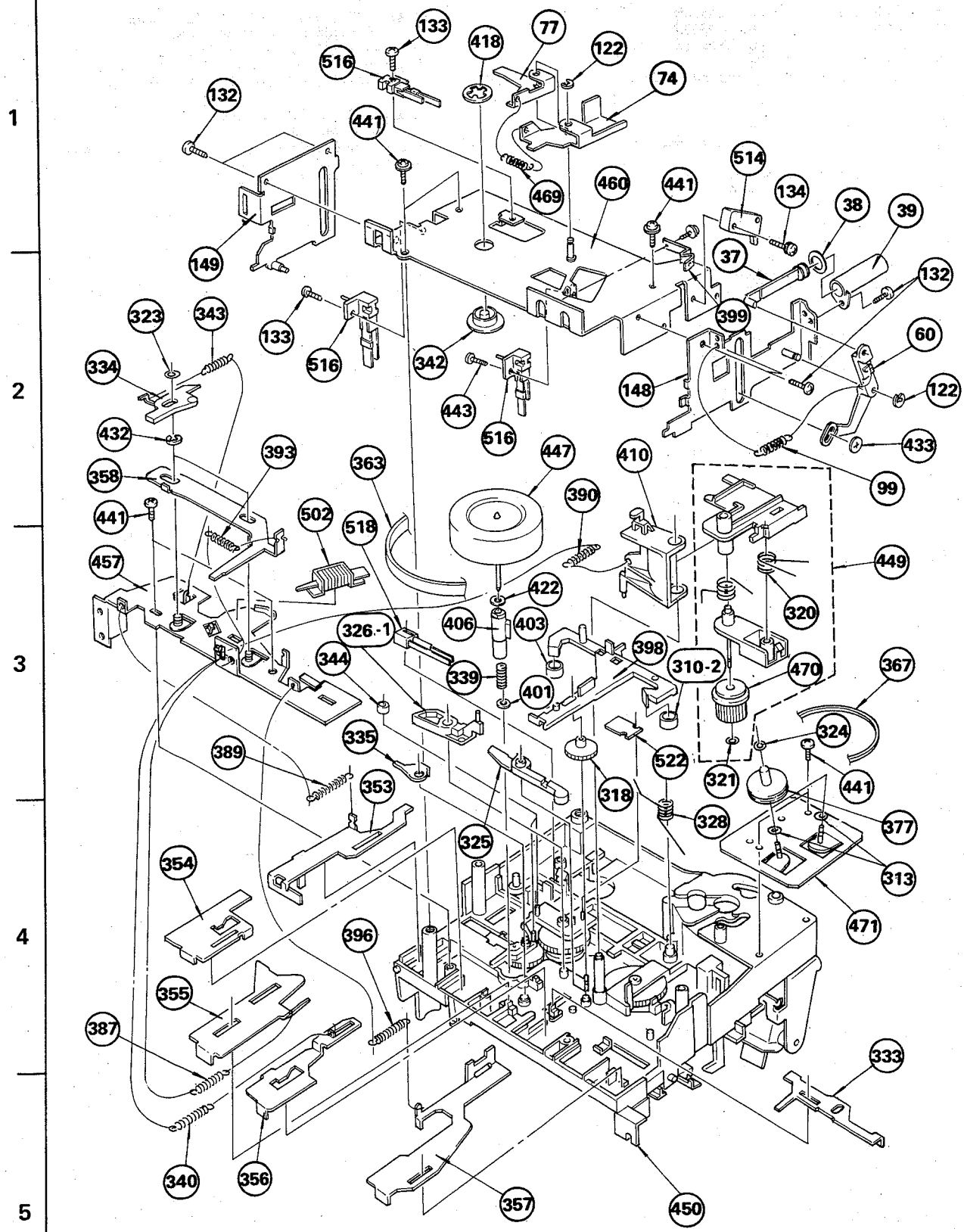
5-3.

A
B
C
1
2
3
4
5
31
86
433
441
126
91
62
108
351
432
61
144
103
321
419
431
324
412
350
349
312
465
441
413
326-2
441
432
395
392
391
503-1
467
468
522
437
400
347
369
360
378
348
345
40
466
364
456
370
360
402
405
359
346
433
376
365
380
440
441
419
42
371
41
372
375
459
458
462
519
439
316
43
374
44
383
47
381
515
427
440
373
45
368

5-4.

A
B
C
1
2
3
4
5
444
404
429
385
429
430
306
445
311-2
308
309
331
386
434
409
321
455
461
322
420
435
419
428
366
329
451
441
507
452
307
319
397
46
315
463
362
322
310-1
446
437
336
513
455
407
384
394
361
352
436
317
338
310-1
517
394
453
332
321
454
323
407
382
450
448
327
314
341
311-1
408

5-5.


A
B
C
1
2
3
4
5
133
418
77
122
74
516
132
441
514
460
441
134
38
39
469
37
149
132
399
323
343
133
60
342
516
148
122
334
443
516
432
433
393
447
410
99
358
363
390
441
502
518
449
457
422
320
406
403
326-1
398
310-2
470
367
344
339
401
324
335
522
389
353
321
441
318
328
377
325
313
354
471
396
355
387
333
340
356
357
450

GENERAL SECTION

No.	Part No.	Description
26	3-430-219-00	SPRING, TENSION
27	3-434-146-00	SPRING, TENSION
28	3-483-129-00	SPRING, TENSION
29	3-512-026-XX	SPRING
30	3-538-133-00	PLATE, BATTERY CONTACT
31	3-559-229-00	SPRING
32	3-560-438-11	LID, BATTERY CASE
33	.....	
34	3-565-315-00	DRUM, DIAL
35	3-571-450-00	HEAT SINK
36 ♦	3-572-164-00	COVER, AC TERMINAL
37	3-575-333-00	PISTON
38	3-575-360-00	RING, O
39 ♦	3-576-273-00	CYLINDER, AIR
40	3-577-721-00	BUTTON, FWD
41	3-577-722-00	BUTTON, FF
42	3-577-723-00	BUTTON, REW
43	3-577-724-00	BUTTON, STOP
44	3-577-725-00	BUTTON, REC
45	3-577-726-00	BUTTON, PAUSE
46	3-577-727-00	BUTTON, EJECT
47	3-577-729-00	BUTTON, REC MUTE
48 ♦	3-577-824-00	RETAINER, CUSHION
49	3-578-401-00	BEARING, PULLEY, CHANGE
50	3-578-402-00	PULLEY (S), CHANGE
51	3-578-403-00	PULLEY (L), CHANGE
52 ♦	3-578-404-00	SHAFT, TUNING
53	3-578-405-00	GEAR, TUNING
54	3-578-406-00	GEAR, FLY
55 ♦	3-578-407-00	RETAINER, FLY
56	.....	
57	3-578-410-00	POINTER
58	3-578-411-00	HOLDER, PULLEY
59 ♦	3-578-412-00	PLATE, TH
60	3-578-415-00	ARM, SE
61	3-578-417-00	ROLLER, LG
62 ♦	3-578-418-00	ARM, CH
63 ♦	3-578-420-00	BRACKET, TRANSFORMER
64	3-578-421-00	CUSHION, MICROPHONE
65 ♦	3-578-422-00	HANDLE
66	3-578-423-00	KNOB, BAND SELECT
67	.....	
68	3-578-425-00	KNOB, VOLUME
69	3-578-426-00	KNOB, TONE
70 ♦	3-578-427-00	HOLDER (TUN), LED

GENERAL SECTION

No.	Part No.	Description
71 ♦	3-578-428-00	PLATE, SIDE, HANDLE
72	3-578-430-00	BEARING, HANDLE
73	3-578-431-00	HOLDER (PW), LED
74 ♦	3-578-432-00	LEVER, REC
75 ♦	3-578-434-00	BRACKET, SWITCH, BND
76 ♦	3-578-435-00	RETAINER, PJ
77	3-578-441-00	LEVER, RL
78 ♦	3-578-442-00	PLATE, SHIELD, TRANSFORMER
79 ♦	3-578-443-00	PLATE (A), SHIELD
80 ♦	3-578-444-00	PLATE (B), SHIELD
81 ♦	3-578-445-00	PLATE (C), SHIELD
82 ♦	3-578-446-00	PLATE (D), SHIELD
83	3-578-449-00	NET, SPEAKER
84	3-578-450-00	LEVER, RM
85	3-578-452-00	KNOB, FUNCTION
86 ♦	3-578-454-00	COVER, MD
87 ♦	3-578-455-00	BRACKET, SWITCH, PW
88 ♦	3-578-456-00	HOLDER, PC BOARD
89 ♦	3-578-459-00	CHASSIS, DIAL
90	3-536-767-XX	SPRING, TENSION
91	3-578-461-00	HOLDER, CASSETTE
92	3-578-462-00	HOLDER, METER
93	3-578-463-00	COVER, BATTERY
94 ♦	3-578-464-00	RING (L), SPEAKER
95 ♦	3-578-465-00	RING (R), SPEAKER
96 ♦	3-578-471-00	PLATE, HANDLE GROUND
97	.....	
98	.....	
99	3-578-476-00	SPRING, TENSION
100 ♦	3-578-477-00	RETAINER, POINTER
101 ♦	3-578-478-00	SUPPORT, WINDOW
102	3-578-480-00	SPRING
103 ♦	3-578-481-00	SHAFT, SHIELD PLATE
104 ♦	3-578-485-00	CUSHION (SMALL), MICROPHONE
105 ♦	3-578-488-00	PLATE, SHIELD, SHUT-OFF
106 ♦	3-578-489-00	SUPPORT (B), WINDOW
107	.....	
108	3-701-769-00	PLATE, ORNAMENTAL
109-1	3-701-822-00	HOLDER, WIRE
109-2	3-703-044-26	(Canadian)....CAUTION LABEL, FUSE
110	3-703-136-00	SCREW, TAPPING
111	3-801-216-XX	PULLEY
112	3-811-140-00	PULLEY
113	3-831-441-XX	CUSHION
114	3-846-049-00	PIN, LEAD
115	3-846-312-00	SPACER

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CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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GENERAL SECTION

No.	Part No.	Description
116	♦;3-847-723-00	PIN, LEAD
117	4-011-926-XX	CUSHION
118	4-812-471-XX	SPRING, TENSION
119	7-621-770-87	SCREW +P 2.6X5
120	7-621-773-95	SCREW +B 2.6X6
121	7-621-775-40	SCREW +B 2.6X8
122	7-624-104-04	STOP RING 2.0, TYPE -E
123	7-682-146-01	SCREW +P 3X5
124	7-682-547-04	SCREW +B 3X6
125	7-682-547-09	SCREW +B 3X6
126	7-685-532-19	SCREW +BTP 2.6X5 TYPE2 N-S
127	7-682-549-04	SCREW +BV 3X10
128	7-685-645-71	SCREW +BVTP 3X6 TYPE2 IT-3
129	7-685-647-11	SCREW +BVTP 3X10 TYPE2 N-S
130	7-685-648-11	SCREW +BVTP 3X12 TYPE2 N-S
131	7-685-648-21	SCREW +BVTP 3X12 TYPE2 SLIT
132	7-685-750-01	SCREW +PTT 3X5 (S)
133	7-685-791-01	SCREW +PTT 2.6X5 (S)
134	7-685-794-01	SCREW +PTT 2.6X10 (S)
135	8-814-189-30	MICROPHONE, BUILT-IN (C-1007D)
136	9-911-825-52	CORD, DIAL
137	.....	
138	9-911-830-XX	CUSHION, (C)
139	9-911-851-XX	CUSHION
140	A-3240-634-A	CABINET (FRONT) SUB ASSY
141	A-3251-045-A	KNOB ASSY, TUNING
142	♦;A-3266-141-A	MOUNTED PCB, TUNER
143	♦;A-3270-090-A	MOUNTED PCB, AUDIO
144	♦;A-3279-266-A	MOUNTED PCB, MD
145	X-3578-407-2	CABINET (REAR) ASSY
146	.....	
147	.....	
148	♦;X-3578-401-0	GUIDE (L) SUB ASSY, CH
149	♦;X-3578-402-0	GUIDE (R) ASSY, CH
150	♦;X-3578-403-0	WHEEL ASSY, TU
151	X-3578-405-0	LID ASSY, CASSETTE
152	.....	
153	3-578-424-00	BUTTON, POWER
154	3-578-460-11	SCALE, DIAL
155	3-578-490-00	(Canadian)...LABEL, SPECIFICATION
156	3-578-491-00	(US).....LABEL, SPECIFICATION

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-551-504-00	CORD, POWER
3-566-582-00	BAG, PROTECTION
3-578-469-00	CUSHION (LEFT)
3-578-470-00	CUSHION (RIGHT)
3-578-482-00	CUSHION
3-578-483-00	INDIVIDUAL CARTON
3-701-999-00	LABEL, SERIAL NUMBER
♦;3-703-157-01	LABEL, DESTINATION
3-703-390-01	INSTRUCTION
3-783-567-21	MANUAL, INSTRUCTION
3-783-567-31	(Canadian)...MANUAL, INSTRUCTION; FRENCH
3-793-828-11	QUESTIONNAIRE
3-795-286-20	CARD, CUSTOMER INQUIRY
8-893-528-10	(Canadian)...TAPE, DEMO(CD-815)

MECHANISM SECTION

No.	Part No.	Description
306	3-446-154-XX	SPRING, TENSION
307	3-489-043-00	SPRING, COMPRESSION
308	3-513-237-01	PLATE
309	3-513-237-11	PLATE
310-1	3-527-153-XX	BELT (C)
310-2	3-538-051-00	RUBBER, BRAKE
311-1	3-533-254-11	SCREW, MOTOR
311-2	3-539-237-00	SPRING (3), COMPRESSION
312	3-545-403-00	BEARING
313	3-547-734-00	WASHER
314	3-548-886-00	CUSHION (B), MOTOR
315	♦;3-549-058-00	PLATE, SHIELD, MOTOR
316	3-554-710-00	SPRING, TENSION
317	3-558-606-00	SPRING
318	3-558-620-00	GEAR, REWIND
319	3-558-621-00	CLAW, REEL TABLE
320	3-558-652-00	SPRING
321	3-558-708-01	WASHER, STOPPER
322	3-558-708-11	WASHER, STOPPER
323	3-558-708-21	WASHER, STOPPER
324	3-559-408-00	POLY-WASHER, 1.2 DIA
325	3-561-818-99	LEVER, REVIEW
326-1	3-561-839-00	LEVER, FF
326-2	3-561-843-00	SPRING, COMPRESSION
327	3-561-852-00	SPRING
328	3-564-327-00	SPRING
329	3-564-335-00	TABLE (B), REEL, S SIDE
330	.....	
331	3-570-910-00	BELT, DRIVING
332	♦;3-573-401-00	LEVER, RP (SS)
333	♦;3-573-413-00	LEVER, REC (BSS)
334	3-573-426-00	LEVER (SS), RELEASE, SHUT-OFF
335	♦;3-573-427-00	LEVER, REC (ASS)
336	3-573-438-00	CLAW, RECORDING SAFETY
337	♦;3-573-450-00	LUG, GROUND
338	3-573-451-00	LEVER (SS), EJECT LOCK
339	3-573-461-00	SPRING, COMPRESSION
340	3-573-462-00	SPRING, TENSION
341	3-573-464-00	SPRING, COMPRESSION
342	3-573-467-00	RETAINER (D), THRUST
343	3-573-468-00	SPRING, TENSION
344	3-573-469-00	RETAINER, LEAD, SD
345	3-530-248-XX	SPRING, TENSION

MECHANISM SECTION

No.	Part No.	Description
346	3-578-303-00	ARM, SELECTION
347	3-578-304-00	ARM, DRIVING
348	♦;3-578-306-00	PLATE (A), LOCK
349	♦;3-578-307-00	PLATE (B), LOCK
350	♦;3-578-308-00	PLATE, PREVENTION, REC
351	♦;3-578-309-00	PLATE, PREVENTION, FR
352	♦;3-578-311-00	LEVER (S1), RECORD PREVENTION
353	♦;3-578-312-00	LEVER, PAUSE
354	♦;3-578-313-00	LEVER, REC
355	♦;3-578-314-00	LEVER (S1), FF
356	♦;3-578-315-00	LEVER, FWD
357	♦;3-578-316-00	LEVER, REW
358	♦;3-578-317-00	LEVER, SHUT-OFF
359	♦;3-578-319-00	SHAFT, ARM, SELECTION
360	♦;3-578-320-00	SHAFT, GEAR, CAM
361	3-578-324-00	LEVER, DETECTION
362	3-578-327-00	LEVER (B), EJECT
363	3-578-328-00	BELT, CAPSTAN
364	♦;3-578-329-00	LEVER (C), RECORD PREVENTION
365	3-578-331-00	PLATE, LOCK, PAUSE
366	3-578-334-00	LEVER (R), STOPPER
367	3-578-335-00	BELT
368	♦;3-578-336-00	SHAFT, BUTTON, CONTROL
369	3-578-337-00	LEVER, RELEASE, AMS
370	3-578-338-00	BUTTON, REW
371	3-578-339-00	BUTTON, FWD
372	3-578-340-00	BUTTON, FF
373	3-578-341-00	BUTTON, PAUSE
374	3-578-342-00	BUTTON, REC
375	3-578-343-00	BUTTON, STOP
376	3-578-345-00	SPRING
377	3-578-346-00	PULLEY (A)
378	3-578-347-00	PULLEY (B)
379	.....	
380	3-578-361-00	RETAINER, CHASSIS
381	♦;3-578-362-00	RETAINER, CONTROL LEVER
382	3-578-363-00	LEVER (A), EJECT
383	3-578-366-00	BUTTON (S2), REC MUTE
384	♦;3-578-367-00	LEVER, ERASE
385	3-578-368-00	LEVER, HEAD, ERASE
386	3-578-369-00	BRACKET (S2), HEAD
387	3-578-388-00	SPRING, TENSION
388	.....	
389	3-578-389-00	SPRING, TENSION
390	3-578-390-00	SPRING, TENSION

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MECHANISM SECTION

No.	Part No.	Description
391	3-578-391-00	SPRING, TENSION
392	3-578-392-00	SPRING, TENSION
393	3-578-393-00	SPRING, TENSION
394	3-578-395-00	SPRING, TENSION
395	3-578-396-00	SPRING, TENSION
396	3-578-397-00	SPRING, TENSION
397	3-578-398-00	SPRING, TENSION
398 ♦	3-579-001-00	BRAKE (R)
399	3-579-007-00	PLATE (A)
400	3-579-002-00	ARM (F), DRIVING
401	3-579-003-00	WASHER (S)
402	3-579-005-00	SPRING
403	3-579-008-00	RUBBER (S1), BRAKE
404 ♦	3-579-011-00	PLATE, SHIELD, HEAD
405	3-579-015-00	GEAR, CAM
406	3-579-016-00	PULLEY, DRIVING
407	3-579-019-00	SPRING
408	3-579-026-00	SPRING, TENSION
409	3-579-027-00	SPRING, TENSION
410	3-579-028-00	LEVER (C), REC
411	.....	
412	3-579-348-00	GEAR (A)
413	3-579-004-00	COVER, PULLEY (B)
414	.....	
415	3-579-048-00	SPRING, TENSION
416	.....	
417	.....	
418 ♦	3-638-192-00	RING, RETAINING (TYPE CS)
419	3-701-437-01	WASHER
420	3-701-437-21	WASHER
421	3-701-438-01	WASHER
422	3-701-438-11	WASHER, 2.5
423	3-701-439-21	WASHER
424	3-701-465-00	SCREW, LOCK
425 ♦	3-703-150-11	CLAMP
426	7-613-016-91	WIRE, SHIELD, 3-CORE
427	7-621-257-55	SCREW +P 2.3X8
428	7-621-772-18	SCREW +B 2X4
429	7-621-772-33	+B 2X6.5
430	7-621-955-15	SCREW,TOTSU PWH 2X3
431	7-621-959-35	SCREW,TOTSU PWH 2.6X5
432	7-624-118-01	RING, RETAINING E-2.5
433	7-624-190-11	STOP RING 3, TYPE-CS
434	7-671-112-01	STEEL, BALL
435	7-671-113-01	STEEL, BALL 3

MECHANISM SECTION

No.	Part No.	Description
436	7-687-106-21	SCREW, TOTSU PTP 2X10TYPE2SLIT
437	7-687-134-21	SCREW, TOTSU PTP 2.6X8 TYPE2
438	7-687-134-21	SCREW, TOTSU PTP 2.6X8 TYPE2
439	7-687-207-21	PTPWH 2X12, TYPE 2, SLIT
440	7-687-233-21	SCREW,TOTSU PTPWH 2.6X6,TYPE2
441	7-687-234-11	SCREW,TOTSU PTPWH 2.6X8,TYPE2
442	7-687-234-21	SCREW,TOTSU PTPWH 2.6X8,TYPE2
443	7-687-702-39	SCREW,TOTSU BTT 2.6X5
444	8-658-099-03	HEAD, ERASE ESF212-36
445	8-829-373-40	HEAD (PP181-3602D)
446	8-835-033-01	MOTOR, DC (DNE-3001A)
447	A-2109-005-A	FLYWHEEL ASSY (SS)
448	A-2110-005-A	PINCH ROLLER ASSY
449	A-2136-012-A	IDLER COMPLETE ASSY (SS), FR
450	A-3102-034-A	CHASSIS SUB ASSY (S1), MECH
451	A-3130-020-A	TABLE ASSY, REEL, T SIDE
452	A-3130-024-A	TABLE ASSY, REEL, S SIDE
453	A-3136-014-A	IDLER COMPLETE ASSY, FWD
454	X-3561-801-0	IDLER ASSY, FWD
455	X-3570-020-6	PULLEY, MOTOR (2400)
456 ♦	X-3578-309-0	PLATE (P) ASSY,FUNCTION,SWITCH
457 ♦	X-3578-311-0	RETAINER (S1) ASSY, LEVER
458	X-3578-312-0	LEVER (P) ASSY, CONTROL
459	X-3578-313-0	LEVER (R) ASSY, CONTROL
460 ♦	X-3578-314-0	RETAINER (S2) ASSY, THRUST
461 ♦	X-3578-315-0	BASE ASSY, HEAD
462	X-3578-320-0	PC BOARD ASSY, CONTROL
463 ♦	X-3578-322-0	BRACKET ASSY, SWITCH,DETECTION
464	.....	
465 ♦	X-3578-324-0	BRACKET (N) ASSY, GEAR
466 ♦	X-3578-303-0	SHAFT ASSY, GEAR, DRIVING
467	7-685-780-01	PTT 2X3
468	3-539-229-00	SPRING, TENSION
469	3-564-015-00	SPRING, TENSION
470	X-3563-902-0	IDLER ASSY, FR
471	X-3578-310-0	BRECKET ASSY, PULLLEY

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501 ⚠	1-446-756-00	TRANSFORMER, POWER (T901)
502	1-454-255-00	SOLENOID, PLUNGER (PM2)
503-1	1-454-260-00	SOLENOID, PLUNGER (PM1)
503-2	1-501-231-00	ANTENNA, TELESCOPIC (FM)
504	1-503-019-00	SPEAKER, TWEETER (SP901,902)
505	1-503-023-00	SPEAKER, WOOFER (SP902,903)
506	1-507-678-21	JACK (J101,102,201,202)
507	1-514-346-00	SWITCH, LEAF (S907)
508 ⚠	1-517-072-00	(Canadian)....LAMP HOLDER
509	1-520-437-21	METER, LEVEL
510 ⚠	1-532-268-XX	(Canadian)....FUSE (F901)
511 ♦	1-535-117-00	TERMINAL
512 ♦	1-535-119-00	TERMINAL
513	1-548-545-31	COUNTER, TAPE (WITH ROTARY SW)
514	1-552-561-00	SWITCH, SLIDE (S902)
515	1-552-665-00	SWITCH, MICRO (S904)
516	1-552-804-00	SWITCH, LEAF (S903,906,908)
517	1-552-913-31	SWITCH, ROTARY
518	1-553-490-00	SWITCH, LEAF (S905)
519	1-553-727-00	SWITCH, SLIDE (S909)
520 ♦	1-560-559-00	PIN, CONNECTOR 6P
521 ♦	1-561-674-00	SOCKET, CONNECTOR 4P
522 ♦	1-602-735-00	PC BOARD, SOLENOID
523 ♦	1-604-668-00	PC BOARD, BAND SWITCH
524 ♦	1-604-669-00	PC BOARD, LED (B)
525 ♦	1-604-670-00	PC BOARD, MIC
526 ♦	1-604-671-21	PC BOARD, MUTING
527 ♦	1-604-673-21	PC BOARD, OUTPUT
528 ♦	1-604-674-21	PC BOARD, VOLUME
529 ♦	1-604-675-21	PC BOARD, POWER SWITCH
530 ♦	1-604-676-21	PC BOARD, LED (A)
531 ♦	1-604-677-21	PC BOARD, HEADPHONE
532 ♦	1-604-678-21	PC BOARD, REC MUTE
533 ♦	1-606-006-00	PC BOARD, POWER SUPPLY
C45	1-130-018-00	FILM 0.001MF 5% 50V
C49	1-131-412-00	ELECT(SOLID) 0.47MF 20% 16V
C60	1-161-283-00	CERAMIC 22PF 5% 50V
CF	1-527-795-71	FILTER, CERAMIC
CNJ301	1-561-332-00	JACK, PIN 4P
⚠CNJ901	1-561-213-00	INLET, AC DC
♦CNP301	1-560-557-00	PIN, CONNECTOR 4P
♦CNP303	1-535-117-00	TERMINAL
♦CNP501	1-560-562-00	PIN, CONNECTOR 9P
CP1	1-231-720-00	FILTER, BANDPASS
CP2	1-231-224-00	CR ENCAPSULATED COMPONENT
CP3	1-231-224-00	CR ENCAPSULATED COMPONENT
CT1-4 CV1-4	1-151-382-00	CAP, TUNING, POLYETHYLENE

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D1	8-719-768-71	DIODE 1S2687S-1
D2	8-719-026-11	DIODE 1T261
D3	8-719-026-11	DIODE 1T261
D4	8-719-422-21	DIODE 1T22AM
D5	8-719-422-21	DIODE 1T22AM
D6	8-719-026-11	DIODE 1T261
D7	8-719-162-07	DIODE RD6.2E
D8	8-719-900-41	DIODE SLP141B
D9	8-719-900-41	DIODE SLP141B
D101	8-719-815-55	DIODE 1S1555
D102	8-719-815-55	DIODE 1S1555
D103	8-719-815-55	DIODE 1S1555
D104	8-719-815-55	DIODE 1S1555
D201	8-719-815-55	DIODE 1S1555
D202	8-719-815-55	DIODE 1S1555
D203	8-719-815-55	DIODE 1S1555
D204	8-719-815-55	DIODE 1S1555
D301	8-719-815-55	DIODE 1S1555
D302	8-719-900-41	DIODE SLP141B
D303	8-719-182-07	DIODE RD8.2E
D304	8-719-815-55	DIODE 1S1555
D305	8-719-815-55	DIODE 1S1555
D306	8-719-815-55	DIODE 1S1555
D401	8-719-815-55	DIODE 1S1555
D402	8-719-815-55	DIODE 1S1555
D403	8-719-815-55	DIODE 1S1555
D404	8-719-200-02	DIODE 10E-2
D501	8-719-815-55	DIODE 1S1555
D502	8-719-815-55	DIODE 1S1555
D503	8-719-200-02	DIODE 10E-2
D504	8-719-200-02	DIODE 10E-2
D901 ⚠	8-719-501-34	DIODE S3VC40R
D902 ⚠	8-719-500-34	DIODE S3VC40
IC1	8-759-833-61	IC LA3361
IC301	8-759-276-58	IC TA7658P
IC302	8-759-801-25	IC LA4125T
IC303	8-759-240-81	IC TC4081BP
J301	1-507-643-00	JACK
J901	1-507-670-00	JACK
L2	1-425-632-00	COIL,HIGH FREQUENCY(FM)
L3	1-459-266-00	COIL, WITH CORE
L4	1-401-788-00	ANTENNA, FERRITE-ROD (MW)
L5	1-408-201-00	MICRO INDUCTOR 330UH
L6	1-401-526-00	COIL ANTENNA
L101	1-408-212-00	MICRO INDUCTOR 1.8MMH
L102	1-408-210-00	MICRO INDUCTOR 1.2MMH
L201	1-408-212-00	MICRO INDUCTOR 1.8MMH
L202	1-408-210-00	MICRO INDUCTOR 1.2MMH
L301	1-408-201-00	MICRO INDUCTOR 330UH

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q1	8-729-671-15	TRANSISTOR 710-15
Q2	8-729-167-42	TRANSISTOR 2SC1674
Q3	8-729-167-42	TRANSISTOR 2SC1674
Q4	8-729-671-13	TRANSISTOR 2SC710-13
Q5	8-729-671-13	TRANSISTOR 2SC710-13
Q6	8-729-671-14	TRANSISTOR 2SC710-14
Q7	8-729-671-13	TRANSISTOR 2SC710-13
Q8	8-729-671-13	TRANSISTOR 2SC710-13
Q9	8-729-663-47	TRANSISTOR 2SC1364
Q101	8-729-665-47	TRANSISTOR 2SC1362
Q102	8-729-663-47	TRANSISTOR 2SC1364
Q103	8-729-663-47	TRANSISTOR 2SC1364
Q104	8-729-663-47	TRANSISTOR 2SC1364
Q105	8-729-663-47	TRANSISTOR 2SC1364
Q201	8-729-665-47	TRANSISTOR 2SC1362
Q202	8-729-663-47	TRANSISTOR 2SC1364
Q203	8-729-663-47	TRANSISTOR 2SC1364
Q204	8-729-663-47	TRANSISTOR 2SC1364
Q205	8-729-663-47	TRANSISTOR 2SC1364
Q301	8-729-665-47	TRANSISTOR 2SC1362
Q302	8-729-663-47	TRANSISTOR 2SC1364
Q303	8-729-663-47	TRANSISTOR 2SC1364
Q304	8-729-177-32	TRANSISTOR 2SD773
Q305	8-729-217-33	TRANSISTOR 2SC1173
Q306	8-729-663-47	TRANSISTOR 2SC1364
Q401	8-729-663-47	TRANSISTOR 2SC1364
Q402	8-729-663-47	TRANSISTOR 2SC1364
Q403	8-729-663-47	TRANSISTOR 2SC1364
Q404	8-729-663-47	TRANSISTOR 2SC1364
Q405	8-729-663-47	TRANSISTOR 2SC1364
Q406	8-729-113-32	TRANSISTOR 2SB733
Q407	8-729-663-47	TRANSISTOR 2SC1364
Q501	8-729-663-47	TRANSISTOR 2SC1364
Q502	8-729-663-47	TRANSISTOR 2SC1364
Q503	8-729-663-47	TRANSISTOR 2SC1364
Q504	8-729-663-47	TRANSISTOR 2SC1364
Q505	8-729-113-32	TRANSISTOR 2SB733
R309	1-247-083-00	CARBON 10 5% 1/4W F
R318 ⚠	1-212-950-00	FUSIBLE 4.7 5% 1/2W F
RV1	1-226-235-00	RES, ADJ, CARBON 5K
RV301	1-226-402-00	RES, VAR,SLIDE 20K
RV302	1-226-232-00	RES, ADJ, CARBON 500
RV303	1-226-236-00	RES, ADJ, CARBON 10K
RV304	1-228-129-00	SWITCH, SLIDE VAR 20K/20K
RV305	1-226-797-00	RES, VAR, SLIDE 100K
RV306	1-226-795-00	RES, VAR, SLIDE 20K/20K

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S1	1-553-649-00	SWITCH, LEVER SLIDE
S301	1-552-686-00	SWITCH, SLIDE
S302	1-552-858-00	SWITCH, SLIDE
S303	1-552-859-00	SWITCH, LEVER SLIDE
S304	1-516-542-00	SLIDE SWITCH
S305	1-552-844-21	SWITCH, SLIDE
S901	1-552-533-00	SWITCH, PUSH
T1	1-403-872-00	I.F.T
T2	1-405-655-00	COIL, MW OSCILLATOR
T3	1-403-163-21	CERAMIC FILTER
T4	1-403-952-00	TRANSFORMER, DISCRIMINATOR
T5	1-403-953-00	TRANSFORMER, DISCRIMINATOR
T6	1-404-041-00	COIL, AM
T301	1-433-222-00	TRANSFORMER, BIAS OSCILLATOR

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTROLYTIC CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

RATING

CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF ≈ 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

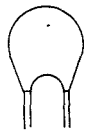
RATING → : Use the high voltage rated one.

CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

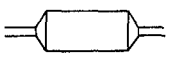
CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS



CAP. (μF)	RATING 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
	→ : Use the high voltage rated one.						
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS



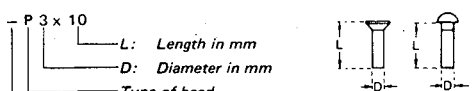
CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/4 WATT CARBON RESISTORS

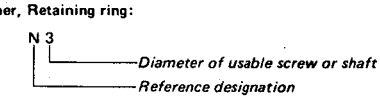
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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